ECHO IRELAND

IRISH RADIO TRANSMITTERS SOCIETY

Summer 2020 Celebrating 88 Years

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"Echo Ireland" Journal of the IRTS

The Irish radio Transmitters Society published quarterly. The Society also publishes EiNews monthly. Private advertisements from paid up members are free of charge.

Articles and event information for publication should be sent to *newsteam@irts.ie* as a word processing file attachment, **not as a PDF**. Images and illustrations should be embedded in the file *for position only*. Make sure to put captions for all images and illustrations at the end of the article, rather than embedded within the images of the main text of your article. Please include the full names and call signs of people included in photos and where necessary obtain their permission.

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Autumn copy deadline - August 31st

EiNews Appeal

EiNews is an ideal channel in which to publicise for clubs. It includes Echo Ireland, the weekly radio News and requires input from members to be successful. Please share information about past and future events or achievements with other members by emailing short pieces, with photographs and links, to *newsteam@irts*.

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AGM 2020 Update

Dear fellow members,

In light of the current Corona-19 pandemic the Committee of the IRTS has decided to postpone the 2020 AGM for the foreseeable future.

The option of using a virtual platform was explored, ZOOM for example, but the idea was discarded due to the technological and logistical difficulties in hosting a meeting of this size and nature. Consequently, the existing IRTS Committee will continue to act in its current role.

If the AGM appears unlikely to take place before the end of 2020 the Committee may have to make a rule change with respect to the number of members required to form a quorum and consider the introduction of a postal vote to elect a new committee, (*please make sure your contact details are up to date*).

The summer issue of Echo Ireland carries a list of all the IRTS Award winners. Please have a look and see if your callsign is listed for any of the trophies. If you wish to take possession of the trophy we will do our best to forward it to you.

The cost of the IRTS Dinner tickets is in the process of being refunded. Those of you who paid in cash will receive a cheque for the appropriate amount. For further information please contact John Ronan EI7IG at jronan@protonmail.ch

Many thanks again to everybody for your assistance and patience in these extraordinary times. Enjoy the lock down as only radio operators can. You need look no further than the current issue of Echo Ireland to occupy yourself and gainfully spend some time on the air! *"Isolate but do not be isolated".*

Stay safe.

Jim Holohan EI4HH.

President, IRTS.

Galway Digital Radio Group News

Steve Wright EI5DD

Recent Proposal

I am pleased to inform that there is a proposal to place a new Multimode Gateway on air from Terenure, Dublin and this is in the early stages. This gateway will operate on 144.850 MHz but will not cause QRM to the Galway system due to the distance apart.

The present Galway City Multi-mode Gateway will be sold as a working system to this new interest. This will need no work apart from a minor modification to the software to reflect the callsign and location.

Meanwhile, the Galway City Gateway will be replaced with a STM32 MMDVM controller and a Tait Data Transceiver controlled by a Raspberry Pi 3 B+.
The Simplex Gateway network will, fairly soon, stretch from Galway to Dublin with DMR, Fusion and D-Star facilities available.

Currently we have the Following Gateways in operation:

EI2GCD in Galway City 144.850
EI2BED in Roscommon 144.8625
EI7SND in Mullingar 430.150
EI2KTD in Kildare on 144.8375
EI2??? Proposal for Terenure on 144.850

Sadly, **EI2DOD** has been taken off air for the last year and we are unsure whether this will become operational again.

I would like to point out that in the last 1.5 Years we have set up the following services covering Co. Galway and spilling into adjacent counties.

1. **EI7RHD** 70cms Galway City
2. Repeater
3. **EJ7IBD** 70cms Inishbofin DMR Repeater
4. **EI7AKR** 70cms Abbeyknockmoy Repeater
5. **EI2GCD** 2 Metre Galway City Multi-mode Digital Gateway (DMR, Fusion & D-Star)
6. **EI2SHD** 2 metre Wires-X Gateway

As soon as is possible we will be placing the following equipment on air from a site near Kilnadeema Loughrea. Constrained by the current lockdown and a Sysop stuck in the UK!

EI7LRD 70cms Loughrea DMR Repeater
EI2TBR 2 metre Loughrea Yaesu Fusion Repeater (with Wires-X facilities)

This completes the Galway Digital Radio Network or does it?

Nothing is ever that simple!

We have two more projects to work on over the next year:

1. **The Galway D-Star Repeater** which will be running on test from Galway City
2. A fully tested Tait Multi-mode Repeater looking for a new site.

Digital Equipment around the Country
Dundalk

Dundalk have recently placed a DMR Repeater on air from the Hill of Faughart, North of Dundalk. It is not currently connected into the Brandmeister Network but will do so once the current restrictions of movement are lifted.

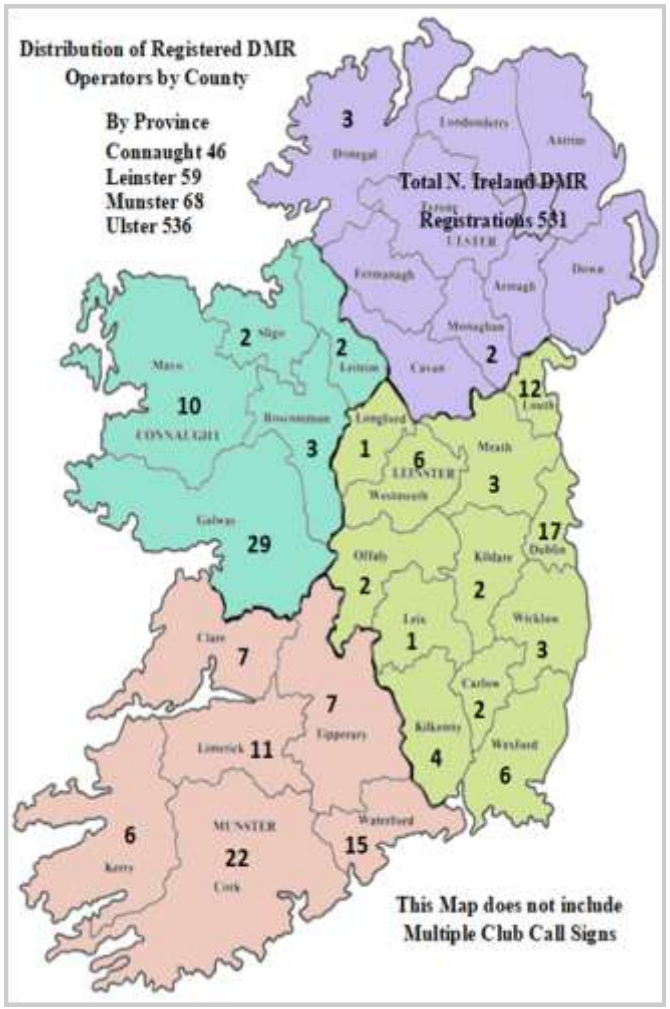
Waterford

The Southern Ireland Repeater Group have three Digital Repeaters on air.

1. EI7CDD, 70 cm Multi-mode Repeater - Carronadavderg, Co. Waterford.
2. EI7WCD, 70 cm Multi-mode Repeater - Tramore, Co. Waterford.
3. EI7MLR, 70 cm Multi-mode Repeater – Mount Leinster, Co Carlow

EI7MLR has a very wide coverage area reaching the outskirts of Dublin.

The current distribution of DMR Registered Operators in Ireland



The map speaks for itself. Interest in in DMR is on a steady increase in Ireland and as facilities are made available in area outside of the West and South East of Ireland the numbers will rise exponentially. Fortunately, there are many operators in the isolated areas who have personal hotspots and they are not missing out too much.

DMR has proven popular since the availability of cheaper Chinese handheld DMR radios. However, the Introduction of Tytera MD9600 and the Anytone 578UV have made it possible to operate DMR Mobile with more realistic power levels. Commercial Radios from Motorola or Hytera also extend the further. Having a Brandmeister Server located in Waterford has allowed Ireland to host its entire DMR infrastructure.

APRS

Some DMR equipment is fitted with an internal GPS system allowing APRS information to be sent as a data message via a DMR repeater and directed to the APRS server. The resultant position and tracks can be found on the site APRS.FI

Roaming

Roaming is possible with Anytone, Motorola, or Hytera mobile or Handhelds. This facility allows the radio to roam between repeaters and will seamlessly and automatically switch to the repeater received at the highest signal strength.

Yaesu Fusion

Yaesu Fusion has established itself well around the country although there is a lesser interest. With the facilities in Galway, and the multimode Repeaters in the Waterford area, the mode is well catered for. It should be pointed out, that there are two Repeaters in Donegal and there is a 70cm Fusion Repeater operating from Woodcock Hill outside of Limerick. Sadly, the Limerick 2 metre Fusion Repeater is QRT. The quality of voice is impressive on this mode and the Wires-X facility allows Nodes to be accessed all over the world. Undoubtedly, this will become popular in time.

D-Star

D-star is extremely popular in Northern Ireland and they have concentrated their efforts towards an efficient and well managed system. D-Star in the South is sketchy. It was always, unfairly, singled out as a system that was expensive and confined to one manufacturer. It is, indeed, expensive but has all the frills required by the amateur fraternity. D-Star has the advantage of being one of the first available Digital modes introduced the amateur market and so has many firmware upgrades bringing it to its current form. Audio is of excellent quality and there are many facilities to route calls around the world.

P25 and NXDN.

These modes are not as popular, but it is possible to facilitate them if there is sufficient interest in the Galway area. The modes have been tested and proven successful. These modes would be incorporated into the Galway system if more than one or two were interested.

Please Note

The decision to make these changes has not been taken lightly. By making these changes your code plug will be compatible with the layout of the Southern Ireland Repeater Network and the layout suggested on the Brandmeister Wiki for Ireland. This will ensure trouble free operation of the system in future.

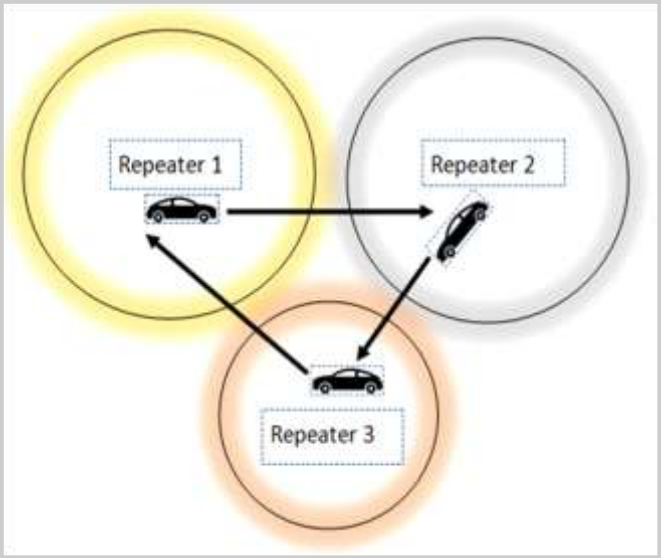
These Changes have been implemented and it is essential that the above changes are made to your Code Plugs.

Roaming on The Galway DMR Repeater Network

Roaming is possible when a radio is set to automatically move between Repeaters depending on which receives the strongest signal. In a roaming system it is necessary to set the RSS threshold which is the minimum signal strength that the radio will consider strong enough before it starts searching for a stronger signal. The RSSI needs to be programmed into the radio.

Consider a radio moving between three repeater coverage areas. As the radio moves from Repeater 1 the signal strength slowly reduces and reach a point where the signal from Repeater 1 reduces below the pre-programmed RRSI threshold. At this point the radio will search through a list of Repeaters programmed into a ***Roam List*** to see if they have a stronger signal at that location. The ***Roam List*** is simply a list of all Repeaters that the radio could use. If one Repeater in the Roam List does have a stronger signal the radio will switch to using that repeater automatically so as the user moves closer to Repeater 2 the radio will switch to Repeater 2 and as the Radio moves closer to Repeater 2 the RSSI level will increase and the radio will stop searching for other repeaters. If the radio starts to move towards Repeater 3, the signal will fall below the RSSSI level and the radio will start searching for a stronger signal. It should detect Repeater 3 and switch to that channel. Once the RSSI is strong enough the radio should stop searching for a stronger repeater and remain with Repeater 3 until the signal, once again, falls below the RSSI threshold.

Roaming between Repeaters



Repeaters have to be able to connect to each other and relay the same audio at the same time on at least one Talk Group. On Hytera and Motorola systems this is called IP Multi-site Connect. This works well in commercial systems dedicated to only a few users but in Amateur radio this can be more difficult. In amateur radio many talk groups are used and are linked differently. Some Talk Groups are linked to all other repeaters all over the country, whilst others are linked to repeaters within a specific area and some are user activated. Area specific Talk Groups can be programmed in such a way that the radio will only roam on Repeaters that have that Talk Group.

Issues

The major problem is that somebody may be operating on another talk group on a Repeater when you roam onto it. This is where roaming would fail in amateur radio. The conversation would have to be terminated or manually set the radio to use another Repeater. A second issue is with user activated Talk Groups. User activated Talk Groups will become activated on a specific repeater only when you have manually transmitted onto that Talk Group. If you activate the talk group on one repeater and then roam into the coverage of another repeater, the talk group will not be activated on the second repeater.

Ensure that the desired Static Talk Groups are programmed onto each repeater in the network and this will work. The only time there maybe problems is if another operator is occupying the Repeater and using a different Talk Group. Finally, there have been many "Nay Sayers" who thought Digital Radio would never take off in Ireland. At this stage, it is well and truly established – they were proven wrong! To get best use of the system please ensure that you keep your Code Plugs up to date.

Updates on the Galway Digital Repeaters

Steve Wright EI5DD

Updates and Reorganisation of Time Slots on the Galway Digital Repeaters

To facilitate Roaming on the Galway Digital Repeater Network, it is necessary to modify the allocation of Static Talk Groups to all Repeaters on the Galway Digital Network.
It is essential to modify code plugs to accommodate the following changes to prevent QRM and the same channels appearing simultaneously on both Time Sots of the Repeater Network.

In modifying Code Plugs it will only be necessary to go into the channels and click on the Time Slot box and simply change it to either Time Slot 1 or Time Slot 2 as applicable. I appeal to all users of the network to make these modifications as soon as possible.

Time Slot 2

TG 2722 (Irish Call Channel) will remain as a Static Talk Group. TG 8 (Galway Digital Radio Group Cluster) will be a Static Talk Group TG 9 is for LOCAL REPEAT and any call on this Talk Groups will not pass through the Network.

Please try to confine the use of Time Slot 2 for the channels above to allow QRM Free Roaming facilities on the Static Channels. Once a QSO has been established on TG 2722 simply QSY to TG2723 or TG 2724 on Time Slot 1

Caution: The use of TG 2723 on Slot 2 will result in simultaneous transmission on both Time Slot 1 and Time Slot 2 and will cause unnecessary QRM. TG 2723 set as a Roaming channel to allow a conversation to be carried out whilst mobile throughout the Galway Network.

Time Slot 1

TG 2723 (Irish Chat Channel) will become a Static Talk Group on Slot 1. TG 7 (The Connacht Cluster) will become a Static Talk Group on Slot 1. TG 9 is for LOCAL RPEAT and any call on this Talk Group will not pass through the Network

All other channels may be used on this Time Slot such as TG 2724 and international Channels.

Logic of above changes

1) More efficient use of both Time slots throughout the Galway Digital Repeater Network
2) By moving from TG 2722, on Time Slot 2 to TG 2723, on Time slot 1 will free up the Calling Channel on Time Slot 2 whilst the "Rag Chew can take place on Time Slot 1
3) Roaming can be carried out on both Time Slots with less chance of QRM

Roaming

With the improved layout, Roaming may be carried out on both Time Slots with minimal QRM. Set up TG 8 on Time Slot 2 for local operation between operators within the catchment area of the Galway Network

Slot 1 can be set up for roaming on TG 2723, necessary when in QSO on the Chat Channel. TG7 will see much less use but can be set up for Roaming on Time Slot 1.

Gateway Operation

Operation on Gatewaysor Hotspots is traditionally on Time Slot 2 as these devices only work on one Time Slot. No changes need to be made to code Plugs for use on Gateways of Hotspots.

Clusters do not function on Gateways, however, an entry into a Cluster on a specific Regional Network may be made by selecting the appropriate Talk Group associated with it as shown below:

Examples

• TG 27250 - Connacht (Cluster TG7 - Slot 1)
• TG 27251 - Leinster (Cluster TG7 - Slot 1)
• TG 27252 - Munster (Cluster TG7 - Slot 1)
• TG 27253 - Ulster (Cluster TG7 - Slot 1)
• TG 27254 - Southern Ireland Repeater Group (Cluster TG8 - Slot 2)
• TG 27255 - Galway Digital Radio Group (Cluster TG8 - Slot 2)

Echo Link Conference List

Brian Whelan EI8EJB

Conference	Conference Information	Status	Conference Node No.
1-KOREA	south korea [8/88]	ON	355040
10MFM	All Japan 10MFM-Grou [3/40]	ON	587389
10WATTS	10WATTS GROUP THAILAND [32]	ON	346613
145MHZ	145MHZ GROUP THAILAND [2]	ON	267485
2-KOREA	1-korea conf HL2KZJ [1/88]	ON	860691
420	Net Tues-Thr730pmES [2/420]	ON	66420
5-KOREA	HL5BRP [1/88]	ON	860086
927_TECH	Private conference [1/25]	ON	630564
AB2M	Emerg. Comms Conf [0/200]	ON	88953
ADER	Conected ADER [0/99]	ON	840690
AELD-ESP	Amigos en la dista [11/150]	ON	475448
AEROLINK	Aviation Conference [1/200]	ON	8525
AKRAB-MY	AKRAB-MY CONF [5/1001]	ON	354002
AKRAD	AKRAD / TURKEY [2/5000]	ON	157213
ALARA	Australian Ladies C [0/500]	ON	286905
AMBRASIL	BRASIL [2/200]	ON	358734
AMRCALNK	YSF Bridge	ON	368661
AMRIO	Conferencia *AMRIO* [2/100]	ON	401824
AMSAT	Amateur Satellites [1/100]	ON	101377
ANECERC	Alberta ERC Network [0/20]	ON	402918
ANGARA	Asiatic RU [2/500]	ON	771119
AOTEAROA	:-)NewZealand ANZEL [2/300]	ON	256883
ARAGON	Zaragoza,Spain. [1/200]	ON	3368
ARARM	Mexico. [2]	ON	259532
ARERT	www.arert.net [1/500]	ON	902723
ARG_TDF	*PATAGONIA* [5/26]	ON	382711
AUSSIE	In Conference VK2BFN-L	ON	95092
AZTECA	Azteca Link [6/500]	ON	49294
BARS	Connected to stn3208	ON	465516
BAURU	BAURU SP [3/100]	ON	880193
BAYRAK	Bayrak Konferans [12/5000]	ON	8301
BEER	Mobeer, S. Dakota [3]	ON	388487
BLNTALK	JO62PO, Berlin [0/20]	ON	993928
BORICUAS	KP4 KP3 NP4 WP4 NP3 [1/200]	ON	983749
BRASIL	*-**-* B R A S I L *-**-*	ON	186714
BRAZLERA	SALA BRASILEIRA [11]	ON	306328
BRAZLERO	Sala Dos Brasileir [14/100]	ON	325710
BVERDE	Barriga Verde. [0/200]	ON	932186
CALABRIA	CALABRIA [4/100]	ON	326539
CANOASRS	In Conference *GAUCHO*	ON	304022
CANONCTY	Denver, CO [0/100]	ON	363976
CATALANA	CATALUNYA [2/100]	ON	110160
CATALINA	Catalina Island, CA [0/20]	ON	384712
CCARCNSW	Central Coast, NSW, [1/200]	ON	926060

Echo Link Conference List

Brian Whelan EI8EJB

CCNVARES	Clark County, NV AR [1/200]	ON	420139
CHIBA	Chiba ConfJAPAN [2/78]	ON	7831
COLLEGE	College Campus [0/2000]	ON	784112
COTAM-MG	Belo Horizonte, MG, [0/50]	ON	160961
CRAEM	RA Emergencia BR [4/2020]	ON	977396
CROSSRDS	Crossroads Conf [0/73]	ON	9735
CUBANOS	Cubanos, USA. [7/500]	ON	388973
CUBAUSA	USA [0/500]	ON	379080
CZR-ESP	Zulu@Radio [22/1000]	ON	3268
DARC	DARC Konf-Server [0/100]	ON	261514
DCF-ARC	Emcomm Nets [1/200]	ON	336037
DEC	"IRLP REF 9099" [0/500]	ON	3575
DODROPIN	Do Drop In [4]	ON	355800
DOI_TONG	ÍÕÊÒ¹-ÅéÒ''Ò [1/100]	ON	372244
DOI_TUNG	Åé Ò ' ' Ò ä · Â [3]	ON	290671
DX-LINK	WORLD WIDE DX LINK [5/5000]	ON	356937
DX-LINK2	Satellite and HF Li [2/100]	ON	357612
EA-RDP	Zaragoza,Spain. [0/200]	ON	375357
EA1SPAIN	LUGO-GALICIA [5/150]	ON	352223
EA8SPAIN	EA8Spain Radioclub [0/1000]	ON	347979
EALINK	ALERTA OVNI 2020	ON	4941
EANET	http://fediea.org [1]	ON	358170
ECHOLIMA	Experimental Bridge [0/256]	ON	9221
ECHOTEST	Audio test server	ON	9999
ECOAMER	__Emergency System_ [0/100]	ON	769847
ERA	E.R.A. Europea. [0/100]	ON	309198
ERC	LDS ERC Nets [1/128]	ON	381043
ERCHQ	ERC Nets [0/300]	ON	379114
ESPANA	Conferencia Latina [30/500]	ON	6954
ESPANA2	Conferencia Latina [3/500]	ON	3160
ETR-LINK	Estarreja, PT. [10/100]	ON	621035
FILAMARS	San Diego, CA [0/20]	ON	764854
FLORIDA	NASA Communication [7/1000]	ON	3082
FMCA-ARC	VPS Lenexa, KS [0/50]	ON	522547
FOESTE	Fronteira Oeste - Brasil	ON	148758
FRACAP	Centro America [4/100]	ON	442821
FRACOL	FRACOL Digital Link [0/28]	ON	265774
FRIENDS	North America [0/500]	ON	29618
GAUCHO	A Pioneira do Sul. [8/53]	ON	3356
GAUCHO2	In Conference *GAUCH [1/51]	ON	153242
GEEKJEEP	Geeks In Jeeps [5/500]	ON	869653
GEORGIA	Private conference [6/200]	ON	4544
GERMANY	Nuernberg [1/100]	ON	71982
HAM	:-)Australia ANZEL [7/300]	ON	69556
HAM-CU	Established 09/05/2009 [25]	ON	304439
HAMFESAM	AM rollcall group.	ON	338280

Echo Link Conference List

Brian Whelan EI8EJB

HAMTHAI	Newington, Ct. [1/8]	ON	848255
HANDIHAM	Handihams Network [6/256]	ON	494492
HI-GATE	"IRLP REF 9254" [0/128]	ON	357564
HISPANOS	Conferencia Hispana [5/22]	ON	354730
HOKKAIDO	HOKKAIDO JAPAN [3/25]	ON	255902
HOTMOVE	Hams On The Move [2/500]	ON	459402
IL-ECOMM	Northern IL Ecomm [0/99]	ON	339893
INDIA	India Conference S [1/2000]	ON	425376
INTERMAR	INTERMAR Conference [4/50]	ON	386970
IRELAND	Ireland. Donegal. [7/8008]	ON	2605
ISLANDS	Pacific Islands [0/500]	ON	894359
ITA-LNK	Milano (ITA) North-S [4/50]	ON	334284
ITALINK	Circuito ITALINK Network	ON	347633
ITALY	Italian Reflector [14/500]	ON	1005
ITALYNET	Network Italia - It	ON	317108
ITALYNEW	C.I.N. PUGLIA	ON	373802
ITARADIO	*AIRCIN - NETWORK*	ON	364332
ITASWISS	Circuito ITALINK Network	ON	284962
JAMBO	K2BSA Conference Nod [0/50]	ON	832996
JAPANESE	Young & old beginner [3/50]	ON	414166
JH7GLZ	KITA GUNI [9/30]	ON	328095
JOTA-365	Scouts JOTA (E) [0/50]	ON	480809
JOTA-BR	Jamboree no Ar, BRA. [0/99]	ON	725955
JOTA-P	The Brazilian Scou [1/1000]	ON	258387
JW-RUNDE	German "JW-Round" [0/100]	ON	44432
K6FN	OUR COFFEE SHOP [2/50]	ON	426824
K7PB	"IRLP REF 9090, Wes [0/500]	ON	946910
KANOYA	* KANOYA-Net * [15/30]	ON	267694
KAPIHAN	www.kapihan.net [0/20]	ON	515940
KB4SVP	Hamradiohangout [0/30]	ON	370143
KC4QLP-C	WX & General Use [2/1000]	ON	290251
KE4DYI-L	Blind Hams Conferen [2/256]	ON	461941
KEYWEST	Keywest, USA. [1/500]	ON	389268
KYUSYU	ALL KYUSYU-NET [13/50]	ON	1734
LAGRANDE	Bienvenidos .USA. [13/250]	ON	388293
LATINOS	Entrelaces Latinos [31/250]	ON	107870
LDSHAMS	*WW-MARA* EMCOMM Alt [0/99]	ON	17388
LIBERDAD	BRASILIA-DF [2/100]	ON	387442
LITORAL	Argentina	ON	352798
LUSO-EUA	"Private Conference"	ON	358287
LUSO-USA	ECHOLINK PORTUGUES	ON	72469
LUSOFONA	Lingua de Camões [11/500]	ON	67236
MARCONI	Private conference	ON	851222
MASONS	Masonic Gathering [0/50]	ON	83055
MIAMIUSA	United States. [6/250]	ON	290630
MICHIGAN	Michigan [0/500]	ON	96170

Echo Link Conference List

Brian Whelan EI8EJB

MINEIRA	MINAS GERAIS - BR. [2/100]	ON	176645
MONTANA	Private conference [5/17]	ON	391181
MRILP-MB	(MABUHAY3) WINNIPEG CANADA	ON	6840
NAGANO	ALL Nagano-Net [12/50]	ON	316288
NARA	Northern Luzon,Phils [1/50]	ON	260876
NAUTICA	Buenos Aires - ARG [15/100]	ON	288997
NETTHAI	THAILAND. [0/200]	ON	258530
NEW-ENG	General QSO	ON	9129
NEW-ENG2	Scheduled Nets	ON	9127
NEW-ENG3	ARES/SKYWARN [0]	ON	9123
NEWSLINE	Newsline report [0/100]	ON	6397
NORDEST	SALA NORDESTINA [2/200]	ON	149757
NOTFUNK	Deutschland [0/50]	ON	359723
NV-GATE	Las Vegas, NV [3/200]	ON	152566
NWLINK	Connected to stn3264	ON	908895
OE-CONF	Vienna Austria [0/50]	ON	291243
OKAYAMA	Mascat-Net Okayama [3/50]	ON	264837
OPENIRLP	See openirlp.net. [2/100]	ON	302324
PAMPA-RS	Sul Brasileiro [12/2020]	ON	8155
PAMPARS2	Sul Brasileiro [0/1000]	ON	949226
PANTANAL	SALA PANTANEIRA [3/500]	ON	511479
PAPA	PAPA System [2/500]	ON	445578
PARANA	Paraná - Brasil	ON	326610
PAULISTA	São Paulo, Brazil [1/500]	ON	930127
PBI	PINOYHAM BROTHERHOOD INTERN	ON	308118
PHUKET	THAILAND, SK. [0]	ON	214322
QRK5	Bangkok Thailand [1/99]	ON	224547
QRP	QRP Conference Serve [0/30]	ON	861450
RADIOCAT	Catalonia [10/100]	ON	384046
RAQI	Radio Amateur Québec	ON	552266
RATS-BC	VANCOUVER,BC [4/50]	ON	131401
REACT	TUESDAY NET 9PM ES [0/5000]	ON	109779
REFL-080	Private conference	ON	857928
REM-ESP	REM (España) [13/1000]	ON	3386
REP-PR	Foz do Iguacu/Pr/BR [1/50]	ON	489676
REPDOM	republica dominican [10/80]	ON	369350
REXLINK	*rExLinK®_RADIO* [4/100]	ON	482955
RIZAL	*LATITUDE*	ON	389596
RPINOYBC	Coquitlam,BC,CANADA [6/30]	ON	82403
RUSSIA	Russian Reflector [25/500]	ON	196189
SAOPAULO	*-**-* B R A S I L *-**-*	ON	473450
SAPPORO	Sapporo,JAPAN [3/50]	ON	284907
SAT-TRAC	HF/SAT/DIGITAL [1/100]	ON	418606
SC-SANTA	Santa Catarina, BR. [5/500]	ON	357343
SCANNESB	New York [6/50]	ON	819602

Echo Link Conference List

Brian Whelan EI8EJB

SCAN_EDM	EVM-SCAN EDMONTON CA [0/50]	ON	496405
SCAN_USA	SCAN_USA - Scan Inte [0/50]	ON	189657
SCARS	South CARS [11/2000]	ON	96140
SCOUT-SP	PY2 Radio Scouting [0/200]	ON	628320
SCOUT-VK	Scouts Australia [0/100]	ON	516518
SE-USA	Southeast USA [5/256]	ON	469003
SEATTLE	Seattle WA Gateway [1/1000]	ON	9198
SELINK	Lookout Mtn, GA US	ON	387904
SIAM-HAM	Siam-ham Conference Ass [1]	ON	379673
SICILY	Conference Sicily [0/50]	ON	271365
SINBAD	Price Utah USA [0/12]	ON	89045
SKYNET	Radio Clubes RD [4/80]	ON	267180
SKY_GATE	Northern California [1/200]	ON	868981
SLOVENIA	Slovenia Conference [5/100]	ON	301457
SPAIN-RE	Radioenlaces.net [6/30]	ON	467622
SPECTRUM	U.S.A/PHILIPPINES [4/50]	ON	355874
STARLINK	STARLINK-SYSTEM [0/5000]	ON	357087
SUR	Chilean Conference [1/50]	ON	337439
TA-TRAC	Konferans Odasi [1/2500]	ON	590187
TACQ	TRAC Gölcük YM2KQ [0/1000]	ON	331933
TALARC	American Legion ARC. [0/90]	ON	247294
TALKBOX	North America [0/25]	ON	501160
TANI	Bangkok Thailand [55/99]	ON	68858
TECHLINK	Technical Rag Chew [1/255]	ON	9229
TECHTALK	Boring technical ta [0/100]	ON	43220
THAI	THAILAND, SK. [3/88]	ON	166612
THAP-SAI	THAILAND,SK. [0/88]	ON	502395
TRAC	TRAC KONFERANS [3/1000]	ON	309716
TSQUP	AaBuRa-net [2/30]	ON	888559
TURAN	Türk konferans [3/5000]	ON	5201
TURK	Türk Konferans [31/5000]	ON	8957
TURKEY	Conference Server [1/5000]	ON	13505
TURKIYE	Konferans Odasi [2/5000]	ON	13506
UEB-RJ	GREMIO-RJ, BRA. [0/99]	ON	725956
UKRAINE	Ukrainian Conferen [12/500]	ON	370296
USA	*USA*-IRLP REF9369	ON	181517
USA-GNG	USA Grits n' Gravy [3/1000]	ON	591550
USA-HAMS	Washington,USA [2/20]	ON	202721
VA7INC	DX1EVM_BC - CANADA [2/50]	ON	41691
VFDB	VFDB Konferenz [0/50]	ON	354399
VK3JED	VK Drivetime Net [0/300]	ON	42840
VK6-HUB	VK6 Allstar/Echolink Hub [0	ON	9610
VKEMCOMM	VK Emergency Comms [0/500]	ON	270177
W1AWBDCT	Newington, Ct. [1/350]	ON	501433
WALES	:-)Wales, UK ANZEL [2/300]	ON	485040
WASH_DC	God Bless America	ON	6154

News and Reports

Galway VHF Group Report

Steve Wright EI5DD

The Galway VHF Group were able to supply communications for the Emergency Services during the Kinvara Rock and Road Marathon last March just prior to the announcement of Covid-19 lockdown. Four operators provided communications throughout the event using 2 metres which performed extremely well throughout the 26 mile course in the Burren, Co. Clare. All operators transmitted APRS information which reduced un-necessary communication as to their location throughout the course.

The Order of Malta were interfaced with the Galway VHF Group via the Tetra system. Weather was good, throughout the event, and there were only minor injuries and the occasional call for assistance where participants decided to drop out before the end of the run.

Many of the other events, for which the Galway VHF Group provide communications, have been cancelled until further notice, and it is unlikely they will be run this year.

Sadly, Lockdown has prevented the installation of the Loughrea DMR Repeater but, as soon as possible, the group will install the system alongside the GREC 2 metre Fusion Repeater. The Loughrea site will provide an excellent coverage area for both repeaters. The Galway VHF Group were delighted to assist Paul, EI9HQB, with the set up of the EI2BED multi-mode digital Gateway for the Roscommon area.

This was placed on air one day prior to lockdown. Slight adjustments to the performance were possible by remote access and this system has been running successfully ever since.

The current projects are the completion of a D-star Repeater and a Multimode Digital Repeater. These will be under test during the summer months and may find a site later in the year.

Special Callsign II2EMCA to Commemorate Emilio Caimi

Emilio Caimi

The special station "**II2EMCA**" will be active – cw only (HF / WARC) from 01.07.2020 until the end of the year - to commemorate **EMILIO CAIMI** (Milan 1876 – 1963), the famous key maker, who supplied the Italian Royal Air Force (Regia Aeronautica), since 1932. We'll publish soon his complete biography, also discovered with the help of unpublished sources, after a century of oblivion. QSL direct via **IZ2FME**, and / LOTW. Info at iz2fme@amsat.org.

News and Reports

Echo Link Conference List

Brian Whelan EI8EJB

WORLD	"IRLP REF 9251" [3/500]	ON	479886
WW-MARA	World Wide EMComm Nets	ON	173882
WW6BAY	Brdg->IRLP Ref 9096 [0/200]	ON	904665
WWARG	ALLSTAR & DMR [1/1000]	ON	672118
WX5FWD	North Texas NWS Ft Worth	ON	372418
WX_TALK	Skywarn & NHC Nets	ON	7203
YACHT	YngAmateurCommHamTm [1/50]	ON	954283
ZONA-XE	Santiago de Queret [0/5000]	ON	171103

JOTA and YOTA Events

Brian Canning EI8IU

JOTA

Myself (EI8IU) and Fergus EI6IB travelled once again to Larch Hill to the HQ of Scouting Ireland to work with the Longwood Scout Troop. We were met by Marty the scout leader (IE2IAB) who brought us to the building where the EI0JOTA station was being set up. Keith (EI5KO) was already in the process of setting up the station. A dipole and a Hex beam were the preferred antennas and both worked very well. The rig was an Icom IC-7300.

It didn't take long to get everything ready and tested so EI0YOTA was on the air! Under the guidance of Marty, the scouts operated throughout the day. SSB was the mode used and the scouts probed to be very competent on the mike! Once the initial fear and shyness disappeared it was clear to be seen that they were enjoying the experience and I would be confident that some of them will go on to become amateurs

Numerous QSOs were made, and adding to the excitement were the QSOs with other JOTA stations. There was great support also from EI stations with several in the log. Several EI clubs had JOTA stations on the air so hopefully in 2020 we can have even more.

The scouts also had the opportunity to assemble so of the electronic kits (Sponsored by EI2SBC) and try their hand at CW on a Morse trainer. They showed great enthusiasm throughout the day.

IRTS President Jim (EI4HH) also paid a visit and spoke at length about his time as an amateur.

A reporter from Scouting Radio interviewed Keith and myself, this interview aired on Dublin FM the week after the event.

Once gain a great day was had by all and the Scouts were a pleasure to work with. I would like to thank Marty and the Longwood Scout Troop for once again inviting us and I hope that this years event can be even better. Thanks also to Jim (EI4HH), Fergus (EI6IB) and Keith (EI5KO) for helping. Also, thanks to the other clubs who put other JOTA groups on the air and finally thanks to the EIs who took the time to have a QSO the scouts.

YOTA

December was international YOTA month and once again it was a major success. A total of 48 stations took part with 128,657 qsos taking place. EI0YOTA was in 12th place out of the 48 with 3,426 qsos, (thanks to those Clubs and individuals who helped). The UK, German and Italian stations were well ahead of the pack.

While there was great demand to work EI0YOTA on CW, SSB and digital there was sadly not too many offers to use the call despite it appeals on the IRTS radio news in the weeks before the event.

The YOTA working group would ask all Clubs and Individuals to support the JOTA event in October and the YOTA event in December as a means of encouraging young members into the hobby.

Youngsters On The Air

Contest News

Joe Ryan EI7GY contestmanager@irts.ie

80 Metres Evening Counties Contests

The contest on **24th March** was well supported, helped by good band conditions. Excluding 'uniques', almost 100 stations were in the logs, including 60 EI and GI stations in 25 counties. There was also participation from 12 overseas DXCC entities.

Following on the introduction of stay-at-home requirements and the consequent cancellation of the VHF/UHF Counties Contests and CW Field Day, we added an additional 80m evening contest to the calendar, for the **28th April**. Again, we had good band conditions and good support, with 27 counties in the logs, along with 13 overseas entities.

40 Metres Daytime Counties Contest, 10th May

We have been running 40m contests in May since 2014. Daytime short-skip conditions on 40 metres have been poor in recent years – as those involved in the Sunday morning radio news bulletin transmissions are well aware of. After a particularly difficult two hours on 40 metres in the May 2019 contest (with band conditions described by one of the participants at the time as "AWFUL / DIRE / ABYSMAL") we reduced the contest period for this event to one hour. This year we were all glad of the shorter time period, as the band was at least as bad and possibly worse than in 2019. Despite this, quite a few contesters stuck with it and, with the help of overseas participants, managed to achieve reasonable scores in the circumstances. Not surprisingly, almost 80% of logged QSOs were between an EI/GI station and an overseas station – a case of *distance lends enchantment to the signal path!*

Contest Trophies

In the Spring 2020 issue of Echo Ireland I mentioned that the **Fixed** and **Portable** sections for the HF daytime contests would be replaced by **High Power** and **Low Power** sections. A consequence of this change was that the award basis for some of the existing contest trophies needed to be changed.

Separately, the organisers of the **UKEICC DX Contests** asked if IRTS would sponsor a trophy for the two annual DX contests they run – the CW event in spring and the SSB event in autumn. These are 24 hour worldwide contests in which the multipliers are the EI and GI counties, along with British post codes and DXCC entities. It makes sense for IRTS to support the UKEICC DX Contests as they are the only DX contests with Irish counties as multipliers.

IRTS already has 21 awards for contests, so rather than add to that number, we looked to re-allocate some of the existing contest awards. Support for the HF Field Days has been dropping in recent years, with no takers for some of the four trophies available for these events since 2016. The committee has therefore agreed that two of the trophies previously available for HF Field Days would instead be allocated to the UKEICC events. That still leaves one cup each for the CW and SSB Field Days, respectively, which in future will be available to the "highest scoring station", irrespective of the section entered.

The revised award basis for the trophies affected by these changes is in the following table. The "new award basis" applies for contests in 2020 onwards, so trophies will be presented on the new award basis at the 2021 AGM.

Contest Calendar

The usual VHF/UHF Field Day contest in early July will not be feasible due to travel and social-distancing constraints. We will be running some form of contest / QSO party over the first weekend of July instead of the field day. Details are still being worked out and will be published shortly.

We hope that SSB Field Day (5th/6th September) will be able to proceed as planned, as well as the 70cm and 2m counties contests on 13th September. Those, like me, who have traditionally taken to the hills for the 70cm/2m events, will certainly be looking forward to setting up our hilltop antennas!

Links

Contest rules & calendar: *www.irts.ie/contests*

Contest results: *www.irts.ie/results*

UKEICC contests *www.ukeicc.com*

SD Contest Logger (free, and perfect for HF Counties Contests) *www.ei5di.com*

Previous Award Basis	New Award Basis
Lough Allen Shield (presented by Shannon Basin Club) It was awarded to the leading entrant in the **SSB Fixed** section of the Winter 80m Counties Contest.	Leading entrant in the **SSB Only – High Power** section of the Winter 80m Counties Contest.
Lough Ree Shield (presented by Shannon Basin Club) It was awarded to the leading entrant in the **SSB Portable** section of the Winter 80m Counties Contest.	Leading entrant in the **SSB Only – Low Power** section of the Winter 80m Counties Contest.
Lough Derg Shield (presented by Shannon Basin Club) It was awarded to the leading entrant in the **SSB/CW Fixed** section of the Winter 80m Counties Contest.	Leading entrant in the **SSB/CW – High Power** section of the Winter 80m Counties Contest.
Lough Boderg Shield (presented by Shannon Basin Club) It was awarded to the leading entrant in the **SSB/CW Portable** section of the Winter 80m Counties Contest.	Leading entrant in the **SSB/CW – Low Power** section of the Winter 80m Counties Contest.
EI5AJ Memorial Cup (sponsored by Limerick Radio Club and presented to the Society by the family of the late Eamon Cassidy EI5AJ) Originally awarded to the leading entrant in the SSB/CW Fixed section of the Summer 80m Counties Contest, it was then awarded to the leading entrant in the **SSB/CW Fixed** section of the October 40m Counties Contest.	Leading entrant in the **SSB/CW – Low Power** section of the October 40m Counties Contest.
Roseville Cup (presented by Avondhu Radio Club) It was awarded to the leading entrant in the **SSB/CW Fixed** section of the May 40m Counties Contest.	Leading entrant in the **SSB/CW – Low Power** section of the May 40m Counties Contest.
Paddy Daly Microphone Paddy Daly EI6CP constructed this trophy, which was awarded to the winning station in the **open section of the IRTS SSB Field Day**.	Highest scoring station in the **IRTS SSB Field Day**.
IRTS HF Shield Presented to the leading station in the 24 hour **restricted section of the IRTS SSB Field Day**.	Highest scoring Single Operator EI station in the **UKEICC DX SSB** contest.
Pete Daly Memorial Cup This cup, which is in memory of the late Pete Daly EI5G, is presented to the winning station in the **open section of the IRTS CW Field Day**.	Highest scoring station in the **IRTS CW Field Day**.
Paddy Smyth Memorial Cup Presented to the Society by the family of the late Paddy Smyth EI9J to honour his memory. It is awarded to the leading station in the **24 hour restricted section of the IRTS CW Field Day**.	Highest scoring Single Operator EI station in the **UKEICC DX CW** contest

Contest Results

Jim Holohan EI4HH

80 Meters Counties Contest January 1st 2020		
Section	**Award**	**Winner**
SSB Only - Fixed	Lough Allen Shield	Aidan McGrath EI8CE
SSB Only - Portable	Lough Ree Shield	Mayo Radio Experimenters Network
SSB/CW - Fixed	Lough Derg Shield	Avondhu Radio Club EI1E
SSB/CW - Portable	Lough Boderg Shield	Keith Crittenden EI5KJ/P
SWL	Lough Boffin Shield	Philip Doherty EI1722
SSB Only - Outside EI/GI	Certificate	Neil Clarke G6MC
SSB/CW - Outside EI/GI	Certificate	Colin Potter GM0DDT

80 Meters Evening Counties Contest Spring 2019		
Section	**Award**	**Winner**
SSB Only	Certificate	Dale McWilliams EI7HDB
SSB/CW	Certificate	John Desmond EI7GL
SSB Only - Outside EI/GI	Certificate	Dave Hobro G4IDF
SSB/CW - Outside EI/GI	Certificate	Andy Malbon G8MIA
SWL	Certificate	Philip Doherty EI1722

70 cms Counties Contest Spring 2019		
Section	**Award**	**Winner**
SSB/FM - High Power Portable	Certificate	Joe Ryan EI7GY/P
SSB/FM - Low Power Portable	Certificate	Albert White EI6KO/P
SSB/FM - High Power Fixed	Certificate	Niall Foley EI4CF
SSB/FM - Low Power Fixed	Certificate	No Entry
FM Only - Single Operator	Certificate	No Entry
SWL	Certificate	No Entry
SSB/FM - Low Power Portable	Certificate	David Morgan MI/EI7GEB/P

CW Field Day 2019		
Section	**Award**	**Winner**
Open Section	Pete Daly Memorial Cup	Gerard Scannell EI5KF/P
Restricted 24 Hours	Paddy Smyth Memorial Cup	No Entry
Restricted 6 Hour	Certificate	Joe Ryan EI7GY/P

Contest Results

Jim Holohan EI4HH

2 Meters Counties Contest Spring 2019

Section	Award	Winner
SSB/FM - High Power Portable	Certificate	Dundalk Amateur Radio Society EI0W/P
SSB/FM - Low Power Portable	Certificate	Albert White EI6KO/P
SSB/FM - High Power Fixed	Certificate	Niall Foley EI4CF
SSB/FM - Low Power Fixed	Certificate	No Entry
FM Only - Single Operator	Certificate	Owen O'Reilly EI4GGB
SWL	Certificate	No Entry
SSB/FM - High Power Portable - Outside EI	Certificate	Harper Brown MI5AFK/P
SSB/FM - Low Power Portable - Outside EI	Certificate	David Morgan MI/EI7GEB/P
SSB/FM - High Power Fixed - Outside EI	Certificate	Robert Rantin MI0RRE

40 Meters Counties Contest May 2019

Section	Award	Winner
SSB Only - Fixed	Certificate	Robert Rantin MI0RRE
SSB Only - Portable	Certificate	S.E.A.R.G. EI2WRC/P
SSB/CW - Fixed	Roseville Cup	Niall Foley EI4CF
SSB/CW - Portable	Certificate	Keith Crittenden EI5KJ/P
SWL	Certificate	Philip Doherty EI1722
SSB Only - Outside EI/GI	Certificate	Mark Dumpleton M0NCG
SSB/CW - Outside EI/GI	Certificate	Richard Mepham G4TPJ

VHF/UHF Field Day 2019

Section	Award	Winner
Open Section - All	Thomond Trophy	Network Southern Area Radio Experimenters Club EI9E/P
Restricted 50 Mhz	SDR Trophy	Tipperary Amateur Radio Group EI7T/P
Restricted - 70 Mhz	Oriel Trophy	No Entry
Restricted 144 Mhz	Shandon Trophy	Tipperary Amateur Radio Group EI7T/P
Restricted 432 Mhz	Slievenamon Shield	John Browne EI7FAB/P
Restricted 1296 Mhz	Dermot Cowley EI2AK Memorial Cup	John Browne EI7FAB/P

Contest Results

Jim Holohan EI4HH

SSB Field Day 2019

Section	Award	Winner
Open Section	Paddy Daly Microphone	No Entry
Restricted 24 Hours	IRTS HF Shield	Tipperary Amateur Radio Group EI7T/P
Restricted 6 Hour	Certificate	Shannon Basin Radio Club EI3Z/P

70 cms Counties Contest Autumn 2019

Section	Award	Winner
SSB/FM High Power Portable	Certificate	Shannon Basin radio Club EI2SBC/P
SSB/FM - Low Power Portable	Certificate	Albert White EI6KO/P
SSB/FM - High Power Fixed	Certificate	John Kelly EI4L
SSB/FM - Low Power Fixed	Certificate	Jim Holohan EI4HH
FM Only - Single Operator	Certificate	Sean Kennedy EI4IP/P
SWL	Certificate	No Entry

2 Meters Counties Contest Autumn 2019

Section	Award	Winner
SSB/FM - High Power Portable	Certificate	Shannon Basin Radio Club EI2SBC/P
SSB/FM - Low Power Portable	Certificate	Albert White EI6KO/P
SSB/FM - High Power Fixed	Certificate	Robert Rantin MI0RRE
SSB/FM - Low Power Fixed	Certificate	Jim Holohan EI4HH
FM Only - Single Operator	Certificate	Sean Kennedy EI4IP/P
SWL	Certificate	No Entry

80 Meters Evening Counties Contest Autumn 2019

Section	Award	Winner
SSB Only - Fixed	Certificate	Brian Canning EI8IU
SSB/CW	Certificate	Aidan McGrath EI8CE
SWL	Certificate	Philip Doherty EI1722
SSB Only - Outside EI/GI	Certificate	Paul Dumpleton M0XDX
SSB/CW - Outside EI/GI	Certificate	Jeremy Browne G3XZG

Contest Results

Jim Holohan EI4HH

40 Meters Counties Contest October 2019

Section	Award	Winner
SSB Only - Fixed	Certificate	Robert Rantin MI0RRE
SSB Only - Portable	Certificate	David Gainda EI6GVB/P
SSB/CW - Fixed	Roseville Cup	Gerard Scannell EI5KF
SSB/CW - Portable	Certificate	Joe Ryan EI7GY/P
SWL	Certificate	No entry
SSB Only - Outside EI/GI	Certificate	Paul Dumpleton M0XDX
SSB/CW - Outside EI/GI	Certificate	Richard Mepham G4TPJ

IOTA Contest 2019

Section	Award	Winner
Leading EI Single Operator	IRTS DX Trophy	Peter Ball EI7CC
Leading EI Single Operator 12 hour CW	Hal Hodgens Trophy	Joe Ryan EI7GY
Leading Island (EJ) DXPedition Station	IRTS IOTA Trophy	Stockport Radio Contest Group EJ6KP

CQWW DX Contest 2019

Section	Award	Winner
Leading EI CW Single Operator	Tom Donnellan Cup	Stan Danilov EI6DX

IRTS Trophies/Certificates

Awards to EI IRTS members for Contest Results 2017

Trophy Title	Awards	Winner
EI7IQ National 6M Shield & Certificate	Leading EI 6 Meter Station	Roger Greengrass EI8KN
EI7IQ National 4M Shield & Certificate	Leading EI 4 Meter Station	Pat Whitty EI8IQ

Contest Results

Jim Holohan EI4HH

IRTS Trophies/Certificates

Awards for Services to the Society or to Amateur Radio 2020

Trophy Title	Awards	Winner
President's Cup & Certificate	This Cup is presented at the discretion of the President of the Society	Dave Dean EI9FBB
Arup Cup & Certificate	Awarded for exceptional service to the Society or to Amateur Radio by an Amateur who has been licensed for a period of five years or less	Michael Foertig EI3GYB
Michael Collins Memorial Trophy & Certificate	Awarded for exceptional service to the Society or to Amateur Radio, specially in the area of training, development and/or instruction by either an individual or an affiliated club	Leo McHugh EI8BR
Pat Conway Perpetual Memorial Trophy & Certificate	Awarded for exceptional service to the Society or to Amateur Radio by either an individual or an affiliated club	Tony Condon EI2AW
Sheila Piper Cup & Certificate	Awarded for service by an individual to the various IRTS news media, i.e. Radio News, Echo Ireland, EINews, Website, Social Media	Steve Wright EI5DD
Pat Maher EI3VA Perpetual Cup & Certificate	Awarded for service as the leading IRTS Regional Representative or Affiliated Club	Galway VHF Group
John Ash Chapman Shield & Certificate	Awarded to an individual, group or club that undertakes significant promotion of Amateur Radio to the public.	Kerry Amateur Radio Group EI1KARG

Awards to IRTS Members for Other Achievements 2020

Trophy Title	Awards	Winner
Foland Shield & Certificate	Awarded for Home Constructed equipment built to the highest standard	John Tubbritt EI4HQB
Kevin Freeny Trophy & Certificate	Awarded for Significant Experimentation/Innovation in any field of Amateur Radio	Mayo VHF Group
Ian Morris Memorial Trophy & Certificate	Awarded to the SWL with the highest number of DXCC Entities heard in the previous calandar year	No Nomination

Excerpts from the HX Files Excerpt 049

Pat Fitzpatrick EI2HX

Hello and welcome to issue 049 of the HX Files. This extract is about a smallish 1 watt 23 cms ATV transceiver that is being used as a piece of test equipment; although it could be used out and about it was not built with that in mind, but more of that later.

Collecting the parts

With what is going on in the world at the moment and trying to stay away from the fridge and cupboards, it was decided to kill some time by doing a shack tidy, and that is one chore that is well over due. I rediscovered more components in various bags and boxes and some stuff that was filed in the wrong place altogether, so some storage boxes were bought to try and bring some order to the chaos.

Whilst in the shack some of the ATV equipment got a bit of an airing and some power was put to them. Switching on the transmitters and connecting cameras and looking for leads took some time as cables and leads were missing from the go kits, (a case of borrowing a part and forgetting to put it back) so a halt to the tidying was called for, and whilst connecting up a bare receiver board this gave me the idea to make this little transceiver. I was half thinking about a different topic for this issue of Echo Ireland, but as it was mainly for portable use, it was decided to put it on the back burner for awhile.

Photo 1 Project Parts

In photo 1 you can see most of the parts to be used in the project, I say most of the parts, because the pile of components grew as they were rediscovered and I said, that would be a handy feature to have in it, the project had out grown the first box picked for the project so it was decided enough was enough on what to be installed into the project and the box you can see on the left of photo 1 would be the one to use, so no more items would be added to the parts pile.

Photo 2 The layout

In photo 2 you can see the results of a few different layouts; most of the parts can be seen in the photo as the project was taking its final shape.

On the left side of the photo a couple of power sources can be seen, the top left is a 12 volt 1.2 amp hour battery and on the bottom left is a mains power supply that is variable from 9 to 17 volts DC by adjusting the pot on its right (coloured blue). The mains power supply is one of the found pieces that would be one of the handy features the project should have, the unit was built with it in place and as you can see in photo 2 there is just enough room for it, but it would not be used at the moment, but it would be wired up in the future.

The project box happened to have plenty of raised mounting holes on the bottom of it, and on both of its sides it had rows of slots and by using some small nuts, bolts and washers in the holes of the TX and RX boards I was able to slide the boards down the groves of the box and the bolts would hold the boards tightly

in place. Three items in the project were held in place by sticky Velcro, (the two power sources and the 1 watt power amp) as I mentioned at the start of the article it would be built as a stay at home unit and it certainly is not water proof as it has around 100 slots in it.

Only one hole was drilled in the back panel and that would be for a charging point for the internal battery (a hole for the mains power supply would be done at a later date) most of the drilling and filing was done on the front panel. The front panel would have five holes drilled in it, a single switch for TX Off RX, a TX light, Aerial socket (N type) DC out and a gland that would allow the fly leads for the audio and video for the monitor and camera.

And speaking of monitors and cameras, the ones used for this project were attached using some hot glue and this was more than good enough for the job and God forbid this unit would be taken apart and used in other projects, that's why we all should all buy at least two of everything because you never know.

The finished unit

In photo 3 you can see the finished item, on top of the unit is the popup monitor, it folds down nice and flat into its self. Behind the monitor is the camera and it folds over almost as flat as the closed monitor when not in use.

As for the front panel it had five holes drilled in it, instead of a LED each for Power, TX on and RX on, it has only one LED to conserve the power of the unit, a small switch that controls the units equipment (ATV boards, Coaxial relay and LED) centre is off, up is TX and down is RX. A gland is used to allow the fly leads get from the Camera and Monitor to the TX, RX boards. A DC socket is used to power the camera or or monitor, and an "N" type socket for the aerial. Connected to the aerial socket in the photo is a Bird 5 watt dummy load, its main use is as a safety measure as the power switch might get a knock and more than likely the switch would be knocked into TX mode rather than RX mode.

In use

The unit works well, as mentioned before it is for home use, but for some of the testing it was placed into the car to test the receivers in the house, and other times placed at the bottom of the garden only using the dummy load as an aerial.

The monitor has no controls on it for the power on / off or volume up or down, so when power is applied it comes on, the volume is very comfortable to listen to in the shack but you might have to stick your ear close to the grill that the speaker sits behind when using it outdoors.

In TX mode a few things get power, the TX board, coaxial relay, the LED and the camera. And in RX mode the RX board and monitor get powered. So far a total of 50 minutes was achieved the first couple of times it was used in both modes and as the battery is new it may operate a bit longer when it gets a few more charges

At the moment I have no tape for the labelling machine so you might be able to see the pencil marks on the bare front panel, so when that outlet opens the labels will be made and some paint applied also.

That's it for this issue of Echo Ireland.
Stay safe.
And may all your signals be P5.
73.
Pat.

Publications Library

Members are reminded that the IRTS web site has a Publications Library, where scanned copies in PDF format of old IRTS publications, principally newsletters, as far back as 1948 are available. This Library forms an important digital record of past society activities.

We encourage members to search for old IRTS publications that are not already on the site and send them to Joe EI7GY for scanning.

HF Happenings

Don Brennan EI6IL

Hi Folks and welcome to the latest edition of HF+ Happenings. For obvious reasons the last few months have been difficult in many ways and also good for the hobby. I see and hear more EI's on the bands particularly on 6m as it gets into the swing of the season. I find 6m quite challenging even with a 6 element beam mostly sitting at approx. 15m. What I see and hear is quite different to even local experimenters and the difference between the Wee County Louth and the Rep. of Cork is immense. Our Southern friends sometimes knocking out the Caribbean and South America with nothing on the more Northern receivers. It's also "The right place at the right time" with often very short openings.

160m went into hibernation to make room for the sometimes frustrating magic 6m band. I didn't have the "luxury" of working from home so ended up busier than ever. With the weather being so good I made hay by carrying out some outdoor essential antenna maintenance for myself and others.

On the HF side of thing's I wasn't too active in the last few weeks. DXpeditions are currently a thing of the past so nothing much to chase on the bands. I worked quite a few STAYATHOME callsigns which kept things ticking over.

Back in March I was still rising from the cot for the Greyline but no joy with VP8PJ on topband. Only a few Europeans making the trip. I was only getting the odd decode so conditions just weren't there. I logged them on the 2nd attempt on 60m as they were going unanswered at 09:00z on 5.357 FT8

I survived storm Jorge which put EI to the test. I generally tilt the mast during dramatic weather events and was glad to do so during Jorge as one of my 30m elements twisted slightly and that was at ground level.

60m, as you know, doesn't count for DXCC at the moment but is a very interesting band across a 24 hour period. It appears to be a hybrid of its neighbours i.e. 40+80m. The low power restriction of 15 watts makes it all the more interesting as I worked VP6R in Oct 2019 at 07:34z and VP8PJ at 07:30z. If the band ever gets approval for DXCC it would be a nice challenge to get 100 entities with the prescribed 15 watts.

I note that TU5PCT was king of the castle on the bands until South Orkney came on air with interest levels dropping for TU5 making it very easy to make a QSO.

I was on the 20m chase for VK9NK on Norfolk Island and saw him spotted on 20m FT8 but nothing on the long or shortpath. I saw every other country on the planet from ZL-VK-BG-JT-JA, you name it but no sign of VK9NK. I saw a cluster post from DL land to say "VK9NK easy on balcony antenna so as you can see from the next photo VK9NK was drawing a line in the sand and not making it further West than the middle of the UK. Ah well that's the way the cookie crumbled.

The Perseverance DX Group travelled with a team of experienced DXpedition operators and activated the South Orkney Islands (IOTA AN-008) from approximately Feb. 21, 2020 through March 5, 2020. South Orkney Islands is currently #16 most wanted on Clublog. They were QRV from Signy Island on 10-160 meters, SSB, CW, RTTY and FT8. Located at 60 degrees south / 45 degrees west, the temperatures hovered around freezing most of the time, with constantly changing conditions of wind, rain, snow and occasional sunshine.
The team erected two extreme weather tents for radio operations, sleeping and eating.
Signy Island is inhabited by various bird species, including giant petrels and penguins as well as elephant seals and fur seals. The campsite was sited to avoid disturbance to wildlife. Establishing a camp site requires extensive research, documentation and permission from multiple government agencies.

The RV Braveheart, from Tauranga, New Zealand transported the hardy DXPeditioners from Punta Arenas, Chile to Signy Island. The ship remained on station during the project.

Regular Features

I know Declan EI6FR had the pleasure of travelling on the old bucket to many far away lands including Campbell Island, South Sandwich Islands, South Georgia and Kermadec Islands.

RV Braveheart

South Orkneys (Signy) Islands were last activated by a major DX-pedition as VP8ORK in Jan/Feb 2011 by the Micro-Lite Penguin Expedition Team which made almost 64,000 contacts. Due to the expected extreme weather, heavy-duty tents suitable for the environment were used. These tents are very expensive and each weigh approximately 270 kg. Due to the cost of activating this DXCC entity, it is expected to be several years before it is again activated.

VP8PJ didn't disappoint finishing up with 83782 qso's with 20564 "uniques". The breakdown was 47.92% CW, 32.4% FT8, 2.91% RTTY and 16.76% SSB.

The Island itself is a small subantarctic island in the South Orkney Islands of Antarctica. It was named by the Norwegian whaler Petter Sørlle (1884–1933) after his wife, Signy Therese. It's about 6.5 km long and 5 km wide and rises to 288 m above sea level. Much of it is permanently covered with ice. The average temperature range is 0 °C to about −10 °C in winter (i.e. in July). The extremes extend to 12 and −44 °C. The British Antarctic Survey maintains the Signy Research Station, a scientific station for research in biology. The base was opened on 18 March 1947, on the site of an earlier whaling station that had existed there in the 1920s. The station was staffed year-round until 1996; since that year it has been occupied only from November to April. It houses ten people. The island has been identified as an Important Bird Area (IBA) by BirdLife International because it supports substantial and varied seabird breeding colonies.

Still waiting evaluation from the World Meteorological Organization (WMO) It was widely reported recently that The Antarctic has registered a temperature of more than 20C (68F) for the first time on record, prompting fears of climate instability in the world's greatest repository of ice.
The 20.75C logged by Brazilian scientists at Seymour Island on 9 February 2020 was almost a full degree higher than the previous record of 19.8C, taken on Signy Island in January 1982.
The highest temperature for the "Antarctica Region" (defined by the WMO and United Nations as all land and ice south of 60°S) of 19.8 degrees Celsius (67.6 degrees Fahrenheit) was observed on 30 January 1982 at Signy Research Station, Borge Bay on Signy Island.
The highest temperature for the "Antarctic continent" defined as the main continental landmass and adjoining islands is the temperature extreme of 17.5°C (63.5°F) recorded on 24 March 2015 at the Argentine Research Base Esperanza located near the northern tip of the Antarctic Peninsula.
Thirdly, the highest temperature for the Antarctic Plateau [at or above 2500 meters (8202 feet)] was the observation of -7.0°C (19.4°F) made on 28 December 1989 at an Automatic Weather Station (AWS) site D-80 located inland of the Adélie Coast.
The lowest temperature yet recorded by ground measurements for the Antarctic Region, and for the whole world, was −89.2°C (-128.6°F) at Vostok station on 21 July 1983.

The well known DXpeditioner Sigi Presch DL7DF using callsign TO7DL was on the move in March when he lead his usual group down to Reunion Island (CQ Zone 39 – ITU Zone 53 – IOTA AF-016 – Grid locator LG79RC) between for 2 weeks. With France and its territories gaining recent permission to use 5Mhz the team activated the now more popular 60m band.

The team used the very popular and value for money Icom IC7300 with a vertical antenna for 160/80m, 40+30m may loops, spiderbeam 20m-10m. A beverage was their choice of RX antenna for the low bands.

The team finished up with approx. 36k QSO's with 22k CW, 5.7K SSB, 6.8K FT8 and a few other RTTY/ PSK qso's. They made 457 contacts on 160m and peaked on 17m with 8121 q's. They used their own online logbook so difficult to figure out how many EI's are in the log. I logged them on 160m for a new one finishing up with 18 slots from 160-10m. The higher bands i.e. 12/10m had a few nice openings so maybe showing signs of improvement as we head into the next sunspot cycle.

Réunion is an overseas department and region of the French Republic and an island in the Indian Ocean, east of Madagascar and 175 km southwest of Mauritius. The island has been inhabited since the 16th century, when people from France and Madagascar settled there. Slavery was abolished on the 20th of December 1848, when the French Second Republic abolished slavery in the French colonies. However, later on indentured workers were brought to Réunion from South India, among other places. The island became an overseas department of France in 1946. As in France, the official language is French. In addition, the majority of the region's population speaks Réunion Creole. Administratively, Réunion is one of the overseas departments of France. Like the other four overseas departments, it is also one of the 18 regions of France, with the modified status of overseas region, and an integral part of the republic with the same status as Metropolitan France. Réunion is an outermost region of the European Union and, as an overseas department of France, part of the eurozone.

March also brought Zambia 9J2LA to the table as they knocked up approx. 35k QSO's in 9 ½ days on the trot.
"I hate FT8 … I often switch to SSB, call 10 minutes without response; made selfspot, call another 10 min without response and…go back to hated FT8 emission"
He reports that he has now VDA's for a few bands as his Spiderbeam is very low and an exhibits a bad takeoff.

Over the last few months Declan EI6FR has led a few SOTA "DXPeditions" to some of our beautiful mountain tops and reports some challenging weather i.e. sunshine at the foothill and gales at the Trig points.

I was happy to log the Kingdom of Brunei on 40m SSB at 16:13z. Signals were flying in from that neck of the planet. I also got an alert call from EI6FR that EX0QR (Kyrgyzstan) was on 160m so delighted to work him as it can be a rare DXCC on topband and challenging. I had Kyrgyzstan on 160m CW but could never manage a return QSL card. It turns out it was a mini DXPedition as the 3 man team setup 1km from the southern coast of Lake Issyk Kul in the foothills of Tien Shan at height about 2000 meters from sea level. They reported that a small herd of horses took a liking to their receive antenna and had to restore daily !!. I was delighted to see the team used Clublog and OQRS.

March also had VP2VB from the British Virgin Islands and the team excited the Ionosphere day and night and one would think it was a very rare DXCC even though its 142 on the most wanted list of madness.

After making almost 18K QSOs, they honoured the spirit of the original VP2VB callsign of the famous DXpeditioner Danny Weil, and his Yasme boat which originally sailed out of the British Virgin Islands.
As reported by the group, the highlights were meeting two of the (few) local hams in VP2V: Kenneth, VP2VK and George, VP2VQ. Out of almost 300 residents of Anegada their host on the island accidentally identified himself as 86 year old VP2VK. When the group blew up one of their 12VDC powers supplies, they found one at VP2VK, rusty and not used for decades but yet supplying the proper voltage. In Tortola VP2VQ was working hard to rebuild his house and the great famous station which were both destroyed in 2017 by the hurricane Irma.

As the low bands were the main targets of the DXpedition, the results for a 2 stations/4 operators/5 days operation speak for themselves: 160m 1837 QSOs and 80m 3157 QSOs. We also tried to focus on Asia & Europe where demand for VP2V is very high on top band and so the team was able to give an incredible high number of 160M ATNO to those continents.

Not a morning goes by but JA is easily workable on 20m from I believe very modest equipment and antennas as I experimented barefoot with my very old Yaesu FT101zd and logged 3 JA's using a 20m dipole. It took a bit of going but got there in the end. Give it a try folks and you will be surprised.

FK8HA from New Caledonia is on the bands almost daily but had to pull out the stops to work him on 20m FT8 pointing my 3 el SteppIR down the long path highway. Got out of Dodge quickly as the JA callbook attacked me again. Although to be fair I did spend an hour in March on the 20m shortpath to JA using 20 watts FT8. I started out with 100 watts and dropped the power after each successful QSO. 20 watts was quite adequate in that I got very few repeats.

I was delighted to work a new IOTA SA-032 Wellington Island on 40/30/20m. They weren't all that strong but got there in the end on CW and FT8

3D2AG is also quite active lately so I stuck him into the 30m CW log at 07:34z.

Regular Features

T6AA has one set of serious CW lugs as he picked out my call out of a simplex stampede on 17m CW. He is very active on air depending on his work schedule but has strived to use the best antennas possible.

You have to take your hat off to many folks in our hobby and I take my hat off to the group who call themselves, "Arctic legends team RI0B". Well, I think they have earned the name as last Sept they were scooting around many Arctic IOTA's and missed out on AS-068 due to their yacht's main generator failure and a tight schedule.
In mid-March they headed back to AS-068 on a snowmobile expedition. The purpose of the expedition this time was to activate an island named in honour of the Russian explorer Stepan Innokentyevich Rastorguev AS-068 under the international IOTA program. The team that reported the northern lights do not stop. Almost all frequency ranges are closed at night and no hope for 160 and 80 meters. They received a storm warning on March 20, again a wind of up to 30 m / s. At night, they began to prepare for the weather and barely held their tent. They had to extend their tent and strengthen the shelter for the diesel station and generators. The temperature stayed at -30C for the entire DXPedition.

By noon on March 20 about 4000 QSOs were in the log. The team reported finding two winter houses dating approximately to the late 18th and early 19th century.

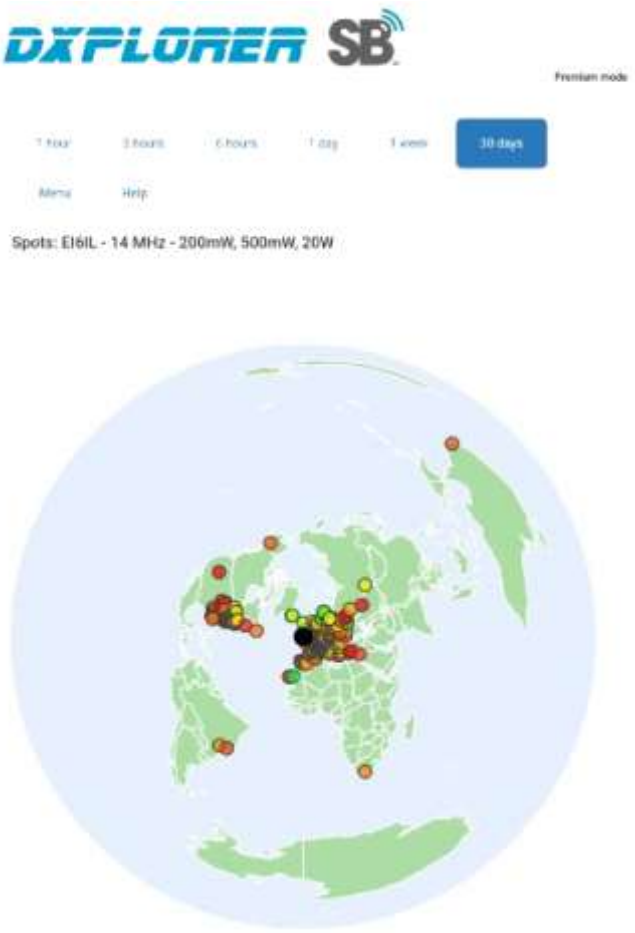
I worked them one evening after work on 10.121 MHz CW (18:21z) with no sign of Arctic flutter. My only chance of a 20m CW contact was on a weekend which worked out fine taking only a few calls.
The bands were in good nick with the tail end of TO2DL and 9J2LA filling in the last few slots. VP2VB started up and one would think it was a very rare DXCC even though its 142 on the most wanted list of madness.

With the mornings getting brighter the Greyline gets too early for tired eyes and puts a stop to some of the very early morning DX at this location.

I caught 6Y5FS on 1.827 MHz CW for a new one on 160m on Mar 23rd 05:56z. This really, more or less, finished my 160m season as 6m season wasn't far away.

Another project constructed and tested in the last few weeks was a homebrew Cobwebb with astonishing results. This is another extremely easy antenna to build and will hopefully serve well during the ever more powerful winter storms when my main mast is lowered and tilted.

The following is a WSPRLite screen shot for a 30 day period using the new Cobwebb showing reception reports reaching the 4 corners of the earth and only 8m off the ground.



Another project, just completed, was an almost full size vertical antenna for 80m. I mounted a 12m Spiderpole on top of an 8m long x 50mm pole with left me approximately 2m short. The remaining few meters tail off and tied off a nearby tree. The location of the antenna is unfortunately in a corner of the garden due to aesthetics!! so, the radial field is not symmetrical. It is not ideal but, so far it is neck and neck with my 80m Inv V with an Apex of approx. 16m. We shall see how it performs when the low band season is back.

Since the bright evenings came on board, I have not worked a lot of stations from my QTH. I also note that some bands were very quiet on CW/SSB and hopping mad with FT8 on which I now only look for new

DXCC's or far away contacts. JA is there for the taking on 20m FT8 almost every day. I tend to leave my main rig on an NCDXF beacon to alert me of conditions.

I read with interest the following extract and think it is very fitting…..

"The Intrepid-DX Group is pleased to announce the recipients of the annual "Intrepid Spirit Award".

This year's award goes to the Perseverance DX Group's VPP8PJ South Orkney Island team for their superb activation from Signy Island. This DXpedition was extremely well planned and executed from this very remote, cold and harsh Island.
This award is to recognize the entire team's collective effort to activate these challenging and much needed entities on behalf of a grateful Global DX Community. The team was comprised of Dave-K3EL, Les-W2LK, Gene-K5GS, Arliss-W7XU, Heye-DJ9RR, Laci-HA0NAR, Vadym-UT6UD, Walt-N6XG, Rob-N7QT, Steve-W1SRD, Mike-WA6O, Ken-NG2H, Hans-Peter -HB9BXE and Alan-VK6CQ.
We acknowledge the team's pursuit of operating excellence in making these difficult activations. It is for these reasons that we are honoring them with our Intrepid Spirit Award. This award would normally be presented in front of their peers at the International DX Convention in Visalia, CA.
This "Intrepid-Spirit Award" is made in memory of our fallen friend and member, James McLaughlin, T6AF who was killed in Kabul, Afghanistan in April, 2011.
The award is intended to recognize and honour those individuals or teams that boldly activate rare entities where their own personal safety is secondary to their pursuit of providing contacts to the DX Community. While we do not encourage DXers to go into harm's way, we recognize that circumstances sometimes require that, and we recognize those Intrepid DXers with the Intrepid Spirit Award."

Michael G7VJR also dug the heels in by allocating 100% of Club Log's computing resources to scientific research into COVID-19 proteins, as part of the Folding@Home project.

Club Log contributed 120 CPU cores (most running at 3.4GHz) to the project. He took the decision to give this work higher priority than Club Log's usual amateur radio functions, so you may see uploads take slightly longer.

INDEXA member Zorro Miyazawa, JH1AJT, has been named the 2020 Dayton Hamvention Amateur of the Year. This honour was bestowed upon Zorro for his tireless efforts in education and humanitarianism. The Officers of INDEXA want all INDEXA members to be aware of and pleased with the recognition given to Zorro.

Our DXFeile friend Hal W8HC reports that in the light of the current COVID-19 virus pandemic, global travel restriction uncertainties as well as obvious concerns for our team's safety and welfare, the previously announced DXpedition to Chesterfield Reefs (TK/C) is being postponed until 2021. Further details will be released as revised plans are solidified.

During the last 12 months we have had 309 spotless days (84%) and the current stretch is the last 27 days up to May 30th 2020. There were 273 spotless days (75%) in 2019. There were 268 spotless days in 2008 through solar minimum in December and 260 spotless days in 2009.

There have been 719 spotless days since the Cycle 24-25 transition began in 2016. The SILSO Spotless Days web page forecasts 750 to 1100 spotless days during the Cycle 24-25 transition with solar minimum in May 2020 (+/- 10 months). During the Cycle 23-24 transition there were 817 spotless days with 508 spotless days during four years before solar minimum in December 2008 and 309 spotless days during the two years after solar minimum.

YN7ZTR is Trevis Rissler, a missionary working in Gaunacastillo for the next two years. His license only allows him to run 50 watts max, which he gets from his Kenwood TS-570D transmitting into an endfed wire used as an inverted vee about 23 feet about the ground. QSL via LoTW, QRZ.com.

The following is a quick summary of a few bands worked over the last few months.

60M (Amazing band not credited for DXCC but try it out on 15 watts)

TO7DL, 9A2AA, 4Z5ML, PC3T, A45XR, TK1CX, ZD8SC, XV1X, NOFW, XE1AY, HB0CC, GU4YBW, VR2XMT

40M

9J2LA, VP8PJ, V85RH, TO7DL, EX0QR, XR8RRC, 50C50C, WW1WW, 4U1UN, OH5STAYHOME, B4CRA, B2CRA

Regular Features

30M
TO7DL, VP8PJ (nostalgic RTTY !!), 9J2LA, XR8RRC, 3D2AG, RN5M, EI2KC, TF5B, JF1FAO, HB9DGV/P, KL7TC, VO2NS, R207RRC, OH2STAYHOME, B5CRA, T77BL.

20M
TO7DL, VP2VB, 9M8DEN, E21EIC, E20WXZ, K9NK, VU2XO, EI3ISB/P (SOTA), EI9JF/P, RI0B, V73NS, PT2VHF, TC1STAYHOME, T6AA, R207RRC, 5W1SA, 4U1UN, 8A1STAYHOME, S79VU, 9M2MDX, A60WARD/4, 5Z4/G4AB, 819IARU, KL7XO, HS2AQG, AL7KC, ZS95SARL, XN1BOA, AH6U, KH6CJJ, B2CRA, CO3TJ, PY7RL, E2STAYHOME, 8J1ITU, OD5STAYHOME, WH7W, ZL3IO.

17M
9J2LA, AP2AM, RN4HEP, TO7DL, VP2VB, EK1RR, BI8CKU, 4L3NZ, UA6AAX, BG9NJY, XR8RRC, T6AA, 5H3DX, 5Z4/G4AB, RA0AM, HS2AQG, TT8SN, B8CRA

15M
VP9PJ, TO7DL, 9J2LA

12M
VP8PJ, TO7DL, 5Z4/G4AB, G0JHC, AM95WARD, D2EB

So to wrap things up, I hope everyone keeps safe and the planet returns to some normality. At the time of writing, EI were experiencing a few nice sunny days so get out there and work on those antennas. I stress that it doesn't take the most expensive equipment and yagi's up high in the sky to work DX. I have many commercial antennas but there is nothing more satisfying by home brewing radio equipment/antennas and meeting new friends on air. A simple dipole cut into resonance has at times proven to be the best overall antenna.

Till the next time.

73 es GD DX

Don EI6I

2020 Jun02	2020 Jun27	Alaska	KL7	KC1KUG SASE	KC1KUG 20200521	IOTA NA-158
2020 Jun10	2020 Jun17	Cayman Is	ZF2FD	LoTW	DXNews 20191211	Grand Cayman Isl NA-016
2020 Jun15	2020 Jul15	Guantanamo Bay	KG4MA	TBA	TDDX 20200508	W1SRR
July						
RSGB IOTA Contest (Jul 25-26, 2020) Check here for pericontest activity too.						
2020 Jul29	2020 Aug15	Uganda	5X1RI	LoTW	TDDX 20200224	By M0KRI
August						
2020 Aug02	2020 Aug08	Aruba	P4	LoTW	TDDX 20200106	P4/NY4P
2020 Aug10	2020 Aug17	St Pierre & Miquelon	TO5T	LoTW	VO1CH 20200201	IOTA NA-032);
2020 Aug22	2020 Sep05	St Kitts & Nevis	V47JA NEW	LoTW	W5JON 20200527	Calypso Bay
2020 Aug27	2020 Sep07	Easter I	XR0YHM	LotW	TDDX 20200415	DK2HM
September						
2020 Sep04	2020 Sep08	Maldives	8Q7QR	JJ1DQR	DXW.Net 20200412	By JJ1DQR
2020 Sep06	2020 Sep17	Albania	ZA	OE6TQG	TDDX 20200218	ZA/OE6TQG
2020 Sep11	2020 Sep18	Alaska	KL7RRC	N7RO	DXNews 20200518	N3QQ NA-039
2020 Sep15	2020 Sep23	Faroe Is	OY	LoTW	TDDX 2019123	OY/DL2AQI
2020 Sep15	2020 Sep30	Easter I	XR0YSP	LoTW	SP6EQZ 20200314	SP3CYY SP9FOW
2020 Sep22	2020 Oct06	St Pierre & Miquelon	FP	LoTW	DXW.Net 20191126	NA-032
2020 Sep23	2020 Oct06	Swains I	W8S	PG5M	PA3EWP 20190922	OC-200

Summer Challenge 2020

EIDXG

Summer Challenge 2020 is a fun DX event organised by the EI DX Group

Exciting NEW Ham Radio Summer event for DXers

Our Summer Challenge 2020 "SC2020" is a fun event organised by the EI DX Group, open to ham radio operators worldwide over the 2020 summer months. Make contact on the HF / VHF Bands, earning points for each unique DXCC, Zone, Irish County and EI DX Group participating member.

- **Beginning June 1st through August 30th, simply accumulate as many DXCCs, CQ WAZ, EIDXG members and EI/GI Counties as possible. Each one only counting once regardless of which Band or Mode you work them on (SSB, CW or DIGI)**

Easy Downloadable / Printable check-sheet to tick off each time you work a new counter.

- **Use your own logging software, all we need is your log sent to us no later than September 6th in order to be scored.**
- **Plaques awarded to the Leaders in EI/GI, Europe and Rest of World. (in the event of a tie "equal score" the winner will be the one who worked their last counter in the shortest length of time).**
- **Open to all, so why not join in the fun and get DXing again?**

Full information and downloads below.

Smallprint

The EIDXG Summer Challenge 2020 begins on June 1st at 00:01 UTC and ends on Sunday 30th August at 23:59 UTC. Open to everyone. All you need to do is to work as many unique DXCCs, CQ Zones, participating EIDXG members and as many of the 32 EI/GI Counties as possible. Each counts just once, regardless of which Band or Mode you work it on. Example: Your first KL7 QSO will give you 1 point for Alaska and another point for Zone 1. If you work another KL7 station on a different Band or Mode it doesn't give anything additional. If you work 10 stations in county Dublin for example, you get the point for your first QSO with Dublin only. If you work Declan EI6FR on 20m CW, you'll get 1 point as he is an EIDXG member. You do not get any additional points if you work him on different Bands or Modes. If you work Hal W8HC, you get a point as he is an EIDXG member…etc..

Hint

Download the Check-Sheet's or Excel format and mark off each one as you work them. Alternatively, why not print them off and have them next to your radio for convenience. There will be winners in the following categories: EI/GI, Europe, Rest of World….. Plus Bonus prizes!!!
In the event of a tie (stations with same score), the Winner will be the one who worked their last counter in the least amount of time.
Your ADIF or Cabrillo log to be submitted to challenge@eidxg.comno later than September 6th. Include your claimed score and full postal address. Winners announced at "DX Féile 2020" on October 3rd. Organiser's decision is final in all matters regarding this event. Enjoy the chase! Please feel free to leave a comment on our Facebook post or share with a friend as this is open to ham radio operators worldwide.

Advice for Calling CQ in CW

Features

Tony Breathnach EI5EM

Responding to a CQ Call

If you hear a station calling CQ, try to get the call-sign first. Assume you hear me (EI5EM) calling and you (EI3XX) want to reply, you wait until you hear the letter K at the end of my CQ before responding.
CQ CQ CQ DE EI5EM EI5EM CQ CQ CQ DE EI5EM EI5EM EI5EM K

You reply
EI5EM DE EI3XX EI3XX KN

K on its own indicates that any station can reply, KN specifies that only the station called should reply. If you hear a European station calling CQ DX it usually means outside Europe. Similarly CQ NA is North America and CQ TEST indicates that the station is taking part in a contest. If you answer a contest station you should know first how to respond and give a report. As well as an RST, some contests require a serial number while others may require your CQ Zone etc. For example 599 127 is followed by 599 128 etc.

If I didn't fully copy a response to my call I would send QRZ? (who is calling me?) or simply EI3? KN

On the first over it is customary to give a signal report (RST). R for Readability (scale of 5), S for Signal Strength (scale of 9) and T for Tone purity (scale of 9) followed by name and location.
Readability refers to how easy it is to copy what is being sent. R5 means "everything copied without any difficulty." Almost without exception modern rigs give a pure stable signal (T9) although, home-made transmitters may give a less pure note.

Example
EI3XX DE EI5EM. MNI TNX OM (old man) FER CALL. UR RST (or RPRT) 599 599 NAME (or OP) TONY TONY ES (and) QTH ARTANE ARTANE NR (near) DUBLIN. HW CPY? (or simply HW?) EI3XX DE EI5EM KN

You would typically reply
EI5EM DE EI3XX. MNI TNX (or TKS) TONY. UR RST 579 579. NAME (or OP) JOE JOE. QTH FINGLAS FINGLAS NR (near) DUBLIN. HW CPY TONY? EI5EM DE EI3XX KN

You should note the time, date, name, call-sign, both reports and QTH in your logbook. Time should always be in UTC. You can also enter any other relevant information or comments as you wish.

Overs can be more informal once basic information is exchanged.
Example
EI3XX DE EI5EM. MNI TNX JOE FOR NICE RPRT. RIG HR (here) ELECRAFT K2 ABT (about) 100 WATTS. ANT (antenna) DIPOLE. WX (weather) RAIN ES (and) TEMP (temp) 15 C. HW COPY JOE ? EI3XX DE EI5EM KN

A good operator will adjust their speed to suit yours. If they are too fast you should send PSE QRS (please slow down). There is also a lot of shorthand that you will get used to in time. Don't worry about it too much for now.

Your concluding over could be like this
EI5EM DE EI3XX. MNI TNX TONY FER NICE QSO. HPE (hope) CUAGN SN (see you again soon). QSL OK VIA BURO (bureau). BEST 73 TONY. EI5EM DE EI3XX VA.
At the then at final over it is usual to send E E (two dits).

Calling CQ

I recommend the 3 X 3 method twice when calling CQ having first made sure that the frequency is clear.
Listen first then send QRL? (is the frequency in use?)
Listen again before sending another QRL? If all clear then send
CQ CD CQ DE EI3XX EI3XX EI3XX CQ CQ CQ DE EI3XX EI3XX EI3XX K
Listen for about six or seven seconds before calling again if there is no reply.

As a beginner it is a good idea to print out prompt cards for your initial CQ, reply to a CQ, final over and other routine details (name, QTH, rig, antenna, power etc.)

I hope this sheet has been useful? Good luck with this great mode and I hope to work you soon.

Best 73 de Tony EI5EM

tonyei5em@gmail.com

Heatmaps

John Ronan EI7IG

Mobile APRS and DMR activity in Ireland

In late 2018, while taking a break during a contest, I was asked a question by a colleague that got me thinking. He asked what the Mobile APRS activity on radio frequencies in Ireland looked like.

Other than being able to comment on local activity that I observed directly, I really could not give a decent answer. While it was not something that I really thought about before, I did think it would be useful to visualise what activity there is in the country.

So after some code bodging (technical term for "beating it into submission", which Darren G0HWW introduced me to), I started gathering all APRS packets passing through the Automatic Packet Reporting System - Internet Service (APRS-IS)[1] backbone, within a bounding box with corners at approximately N55.5, W11.0 and N51.5N, W5.5.

The first thing I noticed was that I had not excluded any repeaters. As they beacon every 15 minutes, and do not move, so the data from them really was not all that interesting.

I left it run for a few days and then noticed that there were quite a few other non-RF stations being captured so in March 2019 modified the code to only record DMR[2], D-STAR[3] and APRS[4] packets. The only difference is that the packets are tagged as DMR or DSTAR packets respectively.

For those that are not aware. Brandmeister[5] and other networks leverage the APRS-IS infrastructure to transport position information data and this is how DMR and D-STAR stations are then visible on http://aprs.fi.

Now that I had the data, what to do with it. Well, I came across Leaflet.heat [6], and after some more bodging, I came up with the following.

Figure 1- Last 12 months of APRS activity

As can be seen from the following image, the main mobile APRS activity is to the South and East of the country, with increased activity in the main cities. The main transport arteries are clearly visible along with the odd ship or aircraft path. The N25 between Cork and Waterford is the busiest "APRS" route in the country, principally due to the work routes of Francis, EI9KT, John, EI2FG and the authors visits to the rebel county.

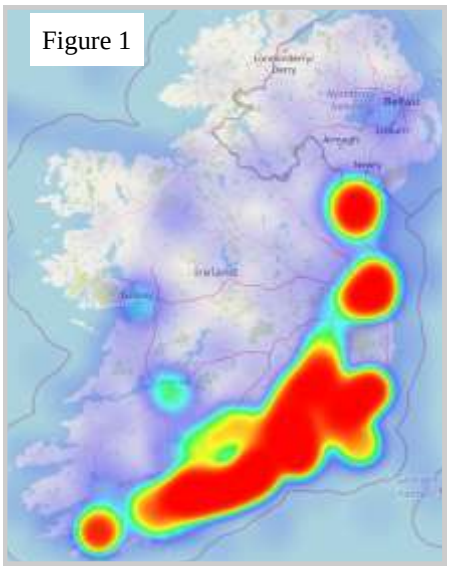
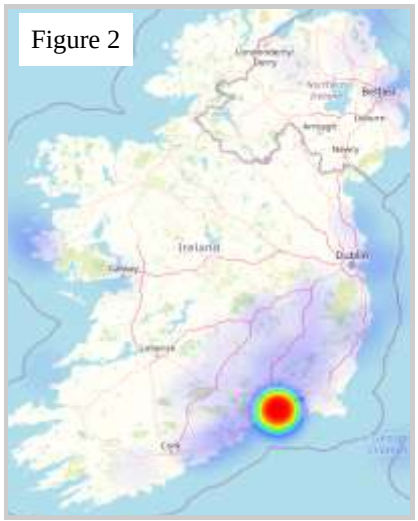


Figure 2 - Last 12 months of DMR activity

As a comparison, the mobile activity on the relatively new DMR network (mid 2017) is a lot less. Without examining the database in detail, I would be quite sure that majority of this data has been generated by the authors own travels with a sprinkling of input from others.



Considering it has taken approximately sixteen years for APRS digipeater going on air (MT. Leinster 2004). I wonder what DMR activity will be visible in 2030, or will both have been replaced by something else entirely.

For anyone interested these interactive web pages and some others are available to view at:
http://graphs.ei3rcw.ampr.org/heatmaps.html
http://www.aprs-is.net/
https://www.etsi.org/technologies/mobile-radio
http://www.dstarinfo.com/home.asp
http://www.aprs.org/
https://brandmeister.network/
https://github.com/Leaflet/Leaflet.heat

Necessity, the Mother of Invention

Keith Crittenden EI5KJ

It was a gorgeous day in County Wexford. Lovely wall to wall sunshine. It was so warm I was walking around the garden in shorts and a T shirt. (Not a pretty sight I know, but with no mirrors in the garden I didn't care!) Was I cutting the grass? or doing a spot of weeding perhaps? No. I was playing radio. I fancied trying a bit of HF /P operating, but with the restriction on unnecessary travel I decided to set up a station in the garden. The question I asked myself was.....What aerial to use?? As in so many aspects of life, size does matter. So to have any chance of putting out a reasonable signal a resonate antenna is a must and as we all know, the lower the frequency the bigger the aerial. I figured that a ground plane antenna for the 20m band would give me the optimum chance of being able to use a band that was 'open' at this time, with the added benefit of being a reasonable size in terms of building and erecting.

Three 6 foot bamboo canes, attached (almost) end to end and secured together with cable ties gave me a temporary mast for a 'vertical' piece of wire just under 5 meters long. Four more quarter wave lengths of wire gave me a reasonable artificial ground plane. Three pieces of nylon string were used as 'guy ropes' supporting the vertical canes and hence produced a quarter wave vertical antenna for the 20m band!

This antenna was connected to the R58 coax via a simple electrical connector block. So where did the wire for the antenna come from? Well the wires were the internal part of a redundant length of an old 3 core mains 'extension lead'. You'll recognise the brown, blue, and yellow/green insulation on them. With the bamboo canes having been borrowed from the wife's poly tunnel this 'brand new' antenna cost me precisely, nothing.

Being made of only light materials I found erecting it to be quite easy although I don't always feel as strong as I use to.

On the other end of the coax is an ATU, VSWR meter and the HF rig. (The rig has a sheet of white paper stuck to the top of it to reflect the heat from the sun. It was very hot day. The rig is powered from the 12v battery on the right of the picture.

I found the 20m band to be very active on the day in question. I often enjoy operating with low power output and found that with between five / ten watts of carrier power I could have QSO's with OE, EA, and 9A. Okay, so it wasn't exactly exotic DX, but it proved that the antenna worked. In addition, I could hear the USA and South Africa although I didn't get to work them. I think there were bigger guns than me calling them, but it made a pleasant change to operate from outside the shack in the warm sunshine.

Splendid Isolation in a Pandemic!

There are few pastimes more suited to adhere to the isolation policy, in the current pandemic, than amateur radio! Many of you have taken advantage of this and have a legitimate excuse to go, guilt free, on the air. This situation has not only led to increased activity but even a much required spring cleaning of many a shack!

Tony Casey EI3HA

Hannah Morgan EI1737 taking part in the recent 80 Metres Evening Counties Contest (SWL section)

Kevin Keane EI8FI

Thos Caffrey EI2JD

Roddy Walsh EI7DF

John Tubbritt EI3HQB

Splendid Isolation in a Pandemic!

Tony Breathnach EI5EM

Seán Muiredach EI8HB

Pat O'Connor EI9HX

Seamus Keenan EI4KE/GI4SZW

Garrett Kennedy & friend

An Introduction to APRS

John Ronan EI7IG

1 What is APRS?

The Automatic Packet Reporting System (APRS)[1] developed by Bob Bruninga, WB4APR, is a light-weight AX.25[2] system that allows users to transmit location and other data in single data packets. Normally stations being tracked use GNSS receivers to provide real time tracking data.

APRS uses existing packet TNCs (terminal node controllers), Soundmodems and small, low cost micro-controller driven units to transmit standard AX.25 packets on a frequency of 144.800 at 1200 baud. APRS can also be used over HF, satellite links and smartphones.

APRS is intended as a short-range tactical system; however, APRS systems can be viewed over broad areas using internet gateways. The gateways can be run on low-cost computers, and can mediate the transmission of packets to and from the international APRS-IS system.

APRS is supposed to augment your voice system and should help reduce voice traffic - but is not a replacement for it!

Some applications of APRS have been the following:

- Post Disaster Management
  Damage assessment
  Liaison tracking
  Logistics management
  Site talk in
- Search and Rescue
- Public Service Events
  Bike Rallies
  Parades
  Hillwalking
- Repeater Advertising

2 How does APRS work?

An APRS station broadcasts (beacons) a single packet of information to all stations in range. This packet usually contains Global Navigation Satellite System (GNSS) co-ordinates and other information. The packet may be received and decoded by any station that can hear it and has suitable software or hardware. Digipeater (Digital Repeater) stations can also hear a packet and rebroadcast it based on rules in the digipeater software and commands that are integral to the packet. Packets that need to travel long distances can also be routed across the public internet.

The fundamental principles of APRS as described by Bob Bruninga are as follows:

The system should provide:

- Reliable real time
- Short range, tactical digital communications.
- Use a 1200 baud network system operating as an Aloha random access channel.
- You should hear everything nearby or within 1 digipeater within 10 minutes.
- You should hear everything within your Aloha circle within 30 minutes.

3 What is this Aloha Circle?

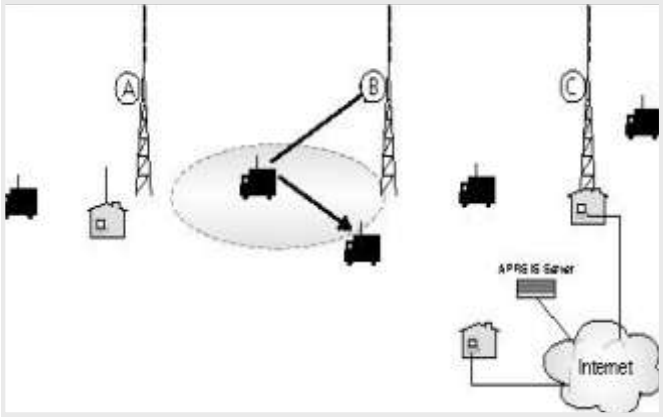
In an Aloha network, stations contend for access by waiting to transmit for a random period of time and have not heard any other stations in that period. At 1200 baud, the 144.800 frequency can support 50 or so user stations at reasonable packet sizes and beacon rates. An Aloha Circle is the radius around you that contains enough stations to fully fill up the channel. This will be unique at any location (review http://www.aprs.org/aloha.html for more information).

There are some problems with this however. The Aloha circle definition is based on the premise that APRS packets take a finite amount of time to transmit and so only a limited number of users may operate in a given area. Poor station configuration can cause packets to travel too far over RF, causing traffic congestion in distant APRS networks, and thus making the channel unusable for those users. Also, mis-configured stations can cause digipeaters to bounce a packet back and forth, effectively blocking out all other users in the area. In addition, stations that beacon too often *steal* transmit time away from other users without getting any benefit because the change in location is too small to be seen on a map (or non-existent if the station is fixed).

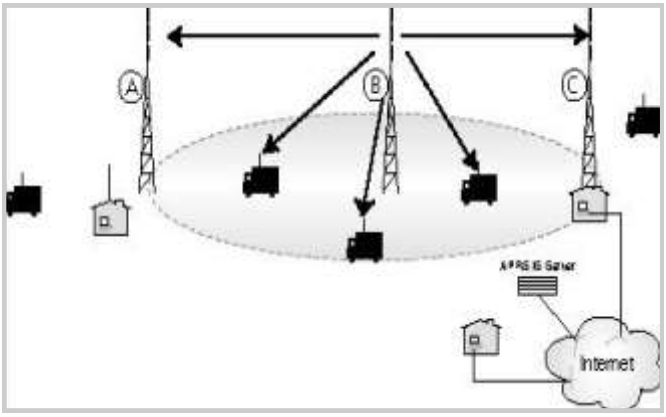
This means that the rate at which an APRS station transmits beacons is an important consideration. The more often a station beacons, the fewer users can use the system. Your beacon rate should take into consideration what you are intending to accomplish and how fast you expect to be moving.

Stations that expect to be moving very slowly over a large area should beacon occasionally (walking/offroading). Stations that are moving rapidly over a small area should beacon more often (or use smartbeaconing ®). If you expect to be tracked on a high-resolution map and the person (s) tracking you needs to know exactly where you are, then it makes sense to beacon faster.

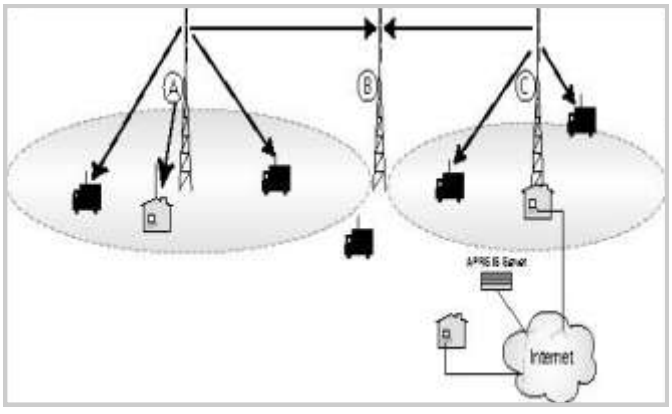
Picture 1: An APRS station beacons and is heard by every other APRS Station in direct range.



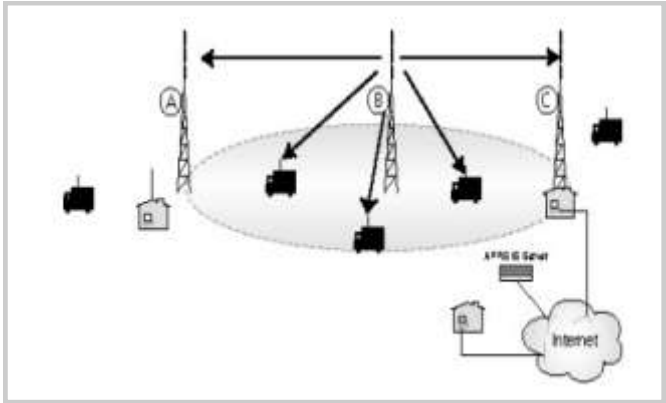
Picture 2: The packet is re-broadcast by every digi than can hear it. The packet is heard by every other APRS station in direct range, including other digi.



Picture 3: The packet is rebroadcast by every digi that heard the first digi. The packet is heard by every APRS station in direct range of this second set of digis, including the first one.



Picture 4: The packet is again rebroadcast by every digipeater in direct range of the second set of digis, including the original digipeater. The new WIDEn-n paradigm (i.e. the use of WIDE2-2 etc) is intended to control this process .



Fixed or stationary stations (digipeaters, home stations etc.) should only beacon once every 10-30 minutes.

Mobile stations should generally beacon no faster than once every 3 minutes. With a three minute beacon rate, a station will move the following distances at a given speed:

Speed	Distance
100kph	5000m
80kph	4000m
50kph	2500m
25kph	1250m
5kph	250m

Table 1; Speed vs Distance travelled in 180 seconds

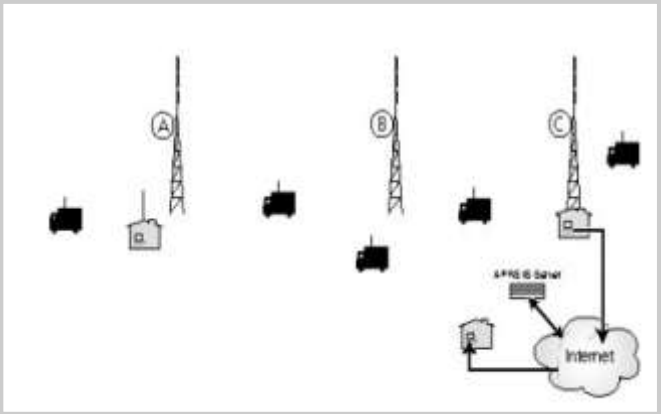
4 Station Types

Digipeaters: A digipeater is a station that retransmits the packets that it hears. There should only be a few digipeaters in a given area i.e. they should have relatively little overlapping coverage. The Southern Ireland Repeater Group has the EI2MLD-2 Digipeater up on Mt. Leinster on the primary APRS frequency of 144.800Mhz. It is running APRS specific firmware.

Internet Gateways: An internet gateway relays packets from radio to the Internet and vice versa. It can be combined with a digipeater and / or a fixed station and would require a computer and internet connection. EI3RCW-2 and EI5HBB-10 are active I-Gates in the South East.

Features

Picture 5: Any packet heard by an internet gateway is transmitted over the Internet to an APRS-IS server. This data is relayed out to any APRS software that is connected to an APRS-IS server.



***Fixed Station*:** A fixed station transmits APRS packets, but remains in one place. It can be used to monitor an area or to transmit local information objects.

Trackers: A tracker is an APRS station that is capable of transmitting a packet containing location information. They are usually small and portable for moving between vehicles. Examples I have used are the Byonics TinyTrack/PocketTracker[3], the open-tracker[4], the Kenwood TH-D72.

Mobile Station : Usually a tracker is semi-permanently fixed in a vehicle. This can include a computer or a suitable GPS for display purposes (e.g. Kenwood TM-D700/TM-D710).

Passive Stations : A passive station only listens to APRS packets, but does not transmit anything. Generally used with a computer just to see other stations.

EI3RCW-2 and EI5HBB-10 are both currently acting as a digipeaters and I-Gates into the APRS-IS. For a number of years now the author has been running the T2IRELAND APRS-IS aggregation server http://ireland.aprs2.net:14501/. This server has, on average, about 300 clients connected and generally has between 5000 and 10000 bytes-per-second going through it 24x7, 365 days per year.

5 Configuration Information

You will need to know the following information to configure your APRS station be it software or hardware:

- SSID (Secondary Station IDentification)
- Latitude and Longitude
- Via Path (Unproto Address)
- Beacon Comment
- Beacon Rate
- Status Text
- Status Rate (dealt with above)

Let us briefly examine each one in turn.

5.1 ***SSID :*** In Packet Radio you can have up to 15 Secondary Station IDentifiers (SSID's), an example is EI7IG-1 through EI7IG-15. EI7IG without an SSID extension, is considered the 0 (zero) SSID, thus it is possible to have sixteen different stations/calls on the air at the same time using our single call sign. That's where the numbers in the call sign come into play. The added dash numbers (-1 ... -15) are used to distinguish the various station (s) or node (s).

So, your SSID uniquely identifies your station. It consists of your callsign at a minimum and is transmitted every time you beacon. It is very useful when you have more than one station operating simultaneously (mobile/home/portable).

In the early days of APRS, the SSID was used to identify the 'type' of the station for display purposes (its symbol). Nowadays as almost all APRS devices are capable of having a symbol configured and included as part of the beacon this is no longer required, though this convention is still supported and mostly followed (i.e. -4 a bicycle, -9 signifies a car, -10 a motorcycle, -12 a jeep).

5.2 ***Latitude and Longitude :*** Latitude and longitude coordinates describe your location uniquely on the face of the earth. Latitude runs north and south, with values from 0 degrees at the equator to 90 degrees at the poles. Latitudes also need a N/S identifier. This may be done by setting the value negative for southern latitudes or including the letters 'N' or 'S'. Longitude runs from 0 to +180 degrees starting at a line running through Greenwich, England and going east. It runs from 0 to -180 going west towards US. This may be alternatively noted by including the letters 'E' or 'W'. APRS co-ordinates are expressed in degrees, decimal minutes format (+DD MM.mm). That is, the decimal places of the coordinate value are removed from the degrees and multiplied by 60 (i.e. the latitude +32.5000 would be expressed as +32 degrees 30.00 minutes). If you have a GNSS receiver connected to your equipment you will not have to enter this manually. The standard settings to use with a GNSS device (GPS) are NMEA[5] Out or NMEA In/Out at 4800 baud.

5.3 ***Via Path :*** Fifteen years ago there was huge debate on the **aprssig** mailing list (https://lists.tapr.org/mailman/listinfo/aprssig_liststaprorg) what address should be used and in what way. Consensus was

reached as to what the paths should be and how digipeaters should be configured. For the really curious have a read of [6]. For the South East, it is recommended that the following paths be used.

Fixed Station WIDE2-1, this should get a packet one hop through the nearest Digipeater and onto the nearest Internet Gateway.

Mobile Station WIDE1-1, WIDE2-2, as the network expands this should get a packet three hops from (for example) a fringe coverage area into an area with an Internet Gateway. WIDE1-1 also lets lower level 'fill-in' [7] digipeaters be used where available (Cork Area mostly).

Special Event Stations WIDE1-1, this should keep the traffic fairly local.

Digipeaters None, keeps traffic local.

Other, less frequently used, addresses that can be used are:

GATE means 'gate packet to HF'

NOGATE, RFONLY means 'don't gate to Internet'

TCPIP, TCPXX, qXX APRS-IS only, not used on RF

As per [6] there is no support for RELAY, WIDE or TRACE in any of the digipeaters or Internet Gateways that we have configured.

5.4 ***Beacon Comment***

The beacon comment is a piece of text that goes out with each beacon. It can be anything you want, as long as it is short i.e.

Monitoring 145.525

Your web page

I would advise against using your email address as it will be picked up by spambots.

An interesting idea that could be used here comes from Bob Bruninga, which he calls APRS Voice Alert [8]. Basically this means that you do not turn the volume on the radio down, but leave it up and then set a 136.5Hz CTCSS tone to mute the speaker. This way you will not hear any packets, but anyone can call you with voice by setting a matching CTCSS Transmit Tone, then you can both QSY for your chat, and when finished you can return to your APRS configuration. This really only applies to mobile stations as a fixed station transmitting a 136.5Hz tone would cause serious annoyance to every mobile station within range. If you so desired, you could announce in your comment the CTCSS tone frequency you were using, thus anyone within range could call you, and then you could QSY.

5.5 ***Status Message:*** The status message is a text message that is transmitted with your beacon, but not necessarily every time you beacon. Generally you can set your station to transmit your status once every n beacons (where n>1).
Can be used to transmit the status of your station (i.e.):

- On duty
- On station
- En Route
- Committed
- Emergency

If you are using a Tracker of some sort, or a Kenwood APRS capable radio, please, please, be careful about the "Emergency" setting. Every time an "Emergency" status message gets to the APRS Internet System (APRS-IS), all connected terminals worldwide will be alerted to your 'emergency' and, if you are very unlucky, may start calling police stations. This could be your local station or theirs in order to get assistance to you.

6 APRS Hardware

6.1 ***TNC:*** A TNC (Terminal Node Controller) is basically a packet modem. One port interfaces to a radio, the other to a computer (or GNSS receiver).
Software package called AGWPE[9], Direwolf[10] or UZ7HO[11] can replicate the functions of a TNC, thus reducing the cost of a system.
There are some dedicated low cost devices that take the place of TNCs. These include the TinyTrak/ PocketTrack and the OpenTracker, in the €50-100 range. These devices are attached to a GNSS receiver and are only for transmitting location data, they cannot receive (though the TinyTrak & OpenTracker can detect an open squelch).

6.2 ***GNSS Receiver:*** There are many GNSS receivers to choose from, in many shapes and sizes. The USA's NAVSTAR Global Positioning System (GPS) is no longer the only kid on the block, Russia's GLONASS, China's BeiDou and Europe's Galileo all now operate in a similar fashion. Some are more practical than others for specific applications. Garmin and Magellan are still common handheld brands in the western world. Prices range from €100 and up. Bargains can be had (search on Ebay). With improvements in technology, receivers have gotten smaller, examples of some USB devices include https://www.sparkfun.com/products/15733 and https://www.sparkfun.com/products/15136 with astonishing accuracy which would not have been possible for the price (€200) only several years ago.

6.*3* ***Radios:*** Whether you use a Mobile or Handheld (lower power) depends mostly on personal preference. Also, as the there is relatively little traffic in Ireland, handhelds are still ok for the foreseeable future, however as the amount of traffic increases (bold assumption!), experience in other countries has shown that attempts to use Handhelds have generally been unsatisfactory since the handhelds are having to fight mobile stations putting out 20 to 50 watts. Also worth bearing in mind is that cabling standards can be quite different for each radio / TNC combination. That said, some radios have *data* DIN plugs that allow for simple, common connections (e.g. FT817/FT7100/FT1500/FT857/FT847/Icom IC-7100 are all identical). There are some radios such as the Kenwood TM-D710 and the TH-D72/TH-D74 that have everything built in, just switch on.

6.4 ***Computers*****:** You only need a computer if you want to see other stations or you want to run an internet gateway or smart digipeater. This could be a laptop, desktop or Raspberry Pi. The only thing to consider is that you can communicate with the radio modem interface. These days that could be USB, SPI (Raspberry Pi) or maybe RS-232 if you have an old TNC.

7 Getting Set Up

Older GNSS receivers, TNC's and computers generally use RS-232 connections. These tend to use either 9 pin or 25 pin 'DB' connectors. RS-232 connections were intended to connect a computer (DTE) to a piece of communications gear (DCE). If you are not sure which pin is the transmit pin and which is the receive, check the voltages between pins 2 and ground and also pin 3 and ground. Generally the pin with a negative voltage is the transmit pin. This should be connected to the receive pin on the GPS and vice versa.

If you do need a USB to RS-232 adaptor, stick to those with genuine FTDI chipsets. Life is too short for dodgy clones.

TNC to radio connections are custom depending on both the TNC and Radio. Though the *Big Three*, Yaesu, Icom, Kenwood did standardise on the 6 pin Mini-Din a number of years ago. It is becoming more difficult to find on newer radios.

7.1 ***GPS Accuracy:*** If accuracy is how correct a position is, with precision being how finely resolved a position is, then older Garmin \& Magellan GPS receiver positions are often very precise, but not that accurate (switch on your GPS with a clear sky, sit still and watch the numbers slowly change). Accuracy is influenced by environmental factors including ionospheric distortion and satellite geometry.

Nowadays consumer grade GNSS receivers are accurate to 5 meters or better. Now with multiple constellations of systems, GPS, Galileo, BeiDou and GLONASS. Some are even accurate to centimers.

8 Software

If you want to see APRS stations, you will need some software. There are software packages for most operating systems:

- Windows: YACC, APRSISCE/32, SARTrack, Xasitr, PinpointAPRS
- Mac: YACC, Xastir
- Unix: YACC, Xastir
- Raspberry Pi: YACC, Xastir

There are also some internet based services such as findu (i.e. http://www.findu.com/cgi-bin/find.cgi?EI7IG-9) and aprs.fi (https://aprs.fi/#!mt=roadmap\&z=11\&call=EI7IG-9)

If you wish to connect to an Internet Server, I would suggest connecting to Ireland.aprs2.net port 14580. Look at http://ireland.aprs2.net:14501 for more information on the ports available.

8.1 ***Discussion:*** In summary, APRS is a real-time tactical digital communications protocol for exchanging information between a large number of stations covering a large (local) area. As a multi-user data network, it is quite different from conventional packet radio.

APRS turns packet radio into a real-time tactical communications and display system for emergencies and public service applications (and global communications).

Although the more recent interfaces to the Internet make APRS a global communications system for live real-time traffic, this is not the primary objective. How APRS is used in an emergency or special event is what drives the design of the APRS protocol.

Although APRS is used almost all of the time over great distances, and benign conditions, the protocol is designed to be optimised for short distance real-time crisis operations.

APRS provides universal connectivity to all stations by avoiding the complexity and limitations of a connected network. It permits any number of stations to exchange data just like voice users would on a voice net. Any station that has information to contribute simply sends it, and all stations receive it and log it. Secondly, APRS recognises that one of the greatest real-time needs at any special event or emergency is the tracking of key assets. Where is the On Scene Co-ordinator? Where are the emergency vehicles? (https://tapr.org/?attachment_id=7045) In order to provide for these scenarios, APRS is a full featured automatic vehicle location and status reporting system too.

Although most APRS software can automatically track mobile GNSS equipped stations, it also tracks perfectly well with manual reports. Additionally, any station can place an object on his map including oneself and within seconds that object appears on all other station displays. In the example of a parade, as each checkpoint with packet/APRS comes on line, its position is instantly displayed to all in the net. Whenever a station moves, the operator updates their position on their map and that movement is transmitted to all other stations. To track other event assets, only one operator needs to monitor voice traffic to hear where things are. As the operator maintains the positions and movements of all assets on their screen, all other displays running APRS software are automatically updated.

Some Radios such as the Kenwood TM-D710/TM-D74 have APRS built in, this allows it to be used completely independently of a computer. If it is used as a home station, and the position is programmed into the radio, a distance and bearing to all received stations is available on the display, and short messages can be exchanged with other stations on frequency. With the addition of GNSS to this radio, the mobile station can be tracked in real-time on the console of any other APRS capable radio or on the screen of any APRS equipped computer.

Things change slightly with the addition of an Internet Gateway (or Igate). An Igate takes the packets heard on RF and pushes it into the APRS internet backbone. Briefly, there are several core[12] servers that exchange all packets between them, there are also second tier[13] servers which connect to these core servers. The purpose of these is to reduce the load on the core servers. The author runs a *tier two* server http://ireland.aprs2.net:14501 hosted in the TSSG Research Group[14] in Waterford IT. The Igate which is running in Waterford IT (EI3RCW-2) is connected into this aprs-is server as are others. These send all (received from RF) position reports and messages up to http://ireland.aprs2.net, and also receive (and transmit to RF) all messages destined for a local APRS station. This allows someone removed from the situation i.e. in a different country, to see what is happening in an area around an Igate. This allows me, for example, to monitor APRS activity while I'm in work with no radio. I connect my APRS application, Xastir[15] to T2IRELAND, as the Igates receive packets on their RF ports they forward them to the tier 2 server, which sends them back down to me (and other clients) and also forwards those packets onto one of the core servers.

Users are encouraged to use the tier two servers, as it helps reduce the load on the core servers. If you are looking for an internet server to connect to I would recommend ireland.aprs2.net port 14580 (or euro.aprs2.net port 14580). And lastly, as a reminder the primary frequency for APRS in Ireland is 144.800MHz, have a listen out, you might just be surprised at how many stations are within radio range

9 Acknowledgements

This article is largely based on a presentation given by John Beadles N5OOM [16]. Many thanks to the Southern Ireland Repeater Group for the work on the network in the South of Ireland. APRS is a registered trademark of Bob Bruninga, WB4APR.

[1] A brief history and bibliography of APRS, http://www.aprs.org/APRS-docs/ARTICLES.TXT
[2] AX.25 Link Access Protocol for Amateur Packet Radio, https://www.tapr.org/pdf/AX25.2.2.pdf
[3] Byonics - Electonic Projects for Amateur Radio, http://www.byonics.com
[4] Opentrac, http://www.opentrac.org
[5] National Marine Electronics Association 0183 Standard, http://www.nmea.org/pub/0183/index.html
[6] Fixing the 144.39 APRS Network, http://www.aprs.org/fix14439.html
[7] Setting up A WIDE1-1 FILL-IN Digipeater, http://www.aprs.org/newN/WIDE1-1settings.txt
[8] VoiceAlert, http://www.aprs.org/VoiceAlert3.html
[9] AGW Packet Engine, http://www.elcom.gr/sv2agw/agwpe.htm

My Journey to Learning CW and Devices Built to Help

Features

Keith Wallace EI5KO

Introduction

I have always been fascinated by Radio, Computers and Electronics.

A chance conversation with EI6FR - Declan Craig, back in Autumn 2015, after seen a post on Facebook about him using Ham Radio and CW lead me to joining the South Dublin Radio Club based in Rathfarnham, Dublin. http://southdublinradioclub.ie/
By chance, the club were running classes that autumn in preparation for the Class 2 licence exam, which I sat in June 2016 and thankfully passed. I was issued with the call sign EI7HEB.
My intention then was to try and get a Class 1 licence which required a Morse Code test.

Morse Classes

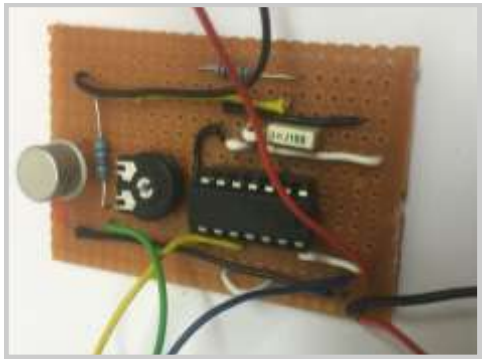
As a few of us, in the club, had passed the Class 2 exam we approached the committee to see if it would be possible to run CW classes the following Autumn. Thankfully EI7GY - Joe Ryan stepped in and ran a class from the end of August through till end December 2016; the aim being to allow participants to sit the exam in February 2017 at the Phoenix Rally in Coolmine.

Joe's approach was to take 4 characters per night. He would send on a straight key and we the participant would listen and transcribe. He loosely followed the format in a book called "The Morse Code for Radio Amateurs" by George Benbow, G3HB. The aim then was to go home and listen to these characters for the week and then move onto 4 more the following week.
In an effort to do this at home I looked around for a PC or Phone App that could send these.
Having searched extensively the one app that allowed me to follow Joe's weekly plan was an ANDROID App called "CWTrainer" by a guy called Wolphi. http://www.wolphi.com/ham-radio-apps/morse-trainer/.

This app allowed whatever speed I was comfortable listening to and allowed only the characters used in the class to be introduced.
It also does so much more.
At that stage I was still not sending morse and didn't have a key.

Next came an Internet trawl looking for a straight key as the exam required sending on a straight key.
I was lucky enough to find a J38 Replica in the US for a few dollars and had it shipped over.
Next problem - what do I hook it up to?...
I wanted something portable to practice on so, the Radio was out of the question.

A quick trawl again on the internet showed up several commercial "Oscillators". I decide to make my own and again a trawl of internet sites lead me to building a Straight key Oscillator.



The next few months were spent listening to morse for at least 15-30 minutes a day, driving the family daft…

CW Exam

The format of the Class 1 exam was one to one with an examiner. Listening to morse sent at a minimum of 5 WPM or whatever was comfortable. The examiner sent a few letters/numbers to determine a speed I was comfortable with. A random paragraph was sent which I transcribed, followed by groups of numbers and then symbols and prosigns. Once finished, I used my own CW Key to send back a paragraph, followed by numbers and eventually symbols and prosigns. Like before an agonising wait ensued to see if I had passed and happily the letter came from ComReg to say that I had passed and been issued with the call sign EI5KO.

Two more South Dublin Radio Club Members sat the exam that day and passed. Colm - EI4KO, Albert - EI6KO and George EI7KO from Athlone who we had got to know passing CW information back and forth.

The Aftermath

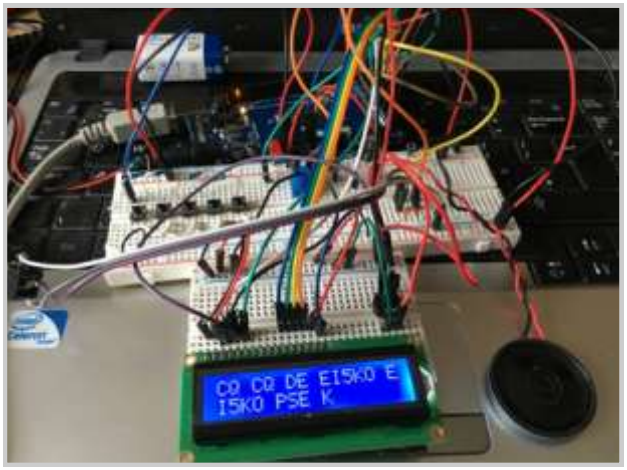
Like a lot who pass the Class 1 licence, I sat on the fence and didn't use CW for quite a while after that. As someone who likes a challenge and sets goals for themselves I was getting to the stage in late 2018 where new DXCC (New countries worked) for me were getting rare on SSB and FT8. CW seemed to present more challenges. So, my interest in CW was rekindled.

I didn't want to go down the route of only sending Machine Generated CW (I would never be forgiven by EI6FR) so the decision was made to purchase an Iambic Key and learn to use it.

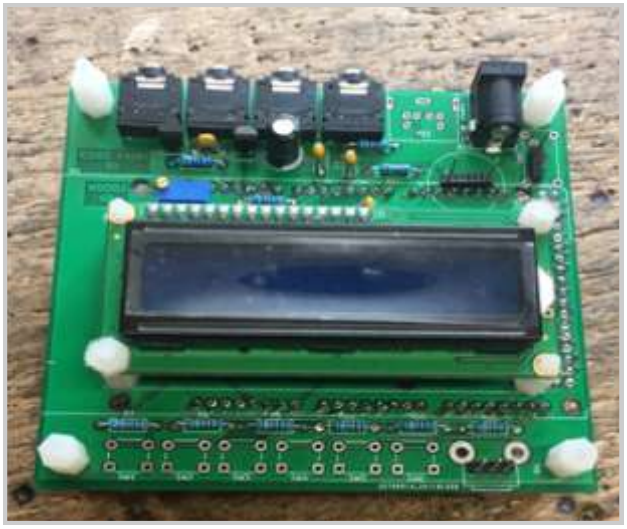
Like before, I asked myself do I connect to the radio directly and use the keyer in the radio or get an independent keyer? I decided to get a keyer and again the internet was my friend but, the choice was overwhelming.

A chance link brought me to a site for an Arduino base CW Keyer developed by K3NG.
This sparked an interest as I had recently helped my son with his final year Engineering project which used an Arduino for control. I still had a spare Arduino board and a few components left over from his project work. Next followed weeks of learning about Arduino, how to use the programming software and playing with sample projects.

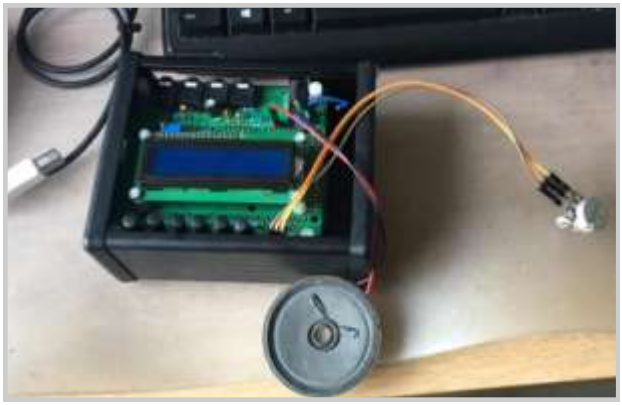
A keyer was built on a breadboard using components left over from my son's project.



Another internet trawl sourced a PCB by W0ODJ in the US and locally.



During the Covid 19 lockdown a box was purchased to house the project.



The finished article, boxed up and ready for use.

This project in the end probably cost me more than an equivalent CW Keyer. But I now have a keyer which is WinKey Compatible, a morse code tutor and a de-coder all built into one package.

The Future for me and CW

South Dublin Radio Club organised classes again last Autumn 2019 under the leadership of Leo, EI8BR and Dermot, EI6FZ.

Harry, EI8KU passed the exam in February and we now continue to run online classes on Thursday evenings. The biggest challenge for any newly qualified CW operator is having the confidence to go on air.

I'm glad to report that my Morse is "Improving" but, even after all this the journey continues.

For those interested in the K3NG Keyer - link below
https://blog.radioartisango on air..com/about-k3ng/

De EI5KO

IRTS SHOP

IRTS Members can avail of a 10% discount on purchases from the RSGB on-line shop - rsgbshop.org.

Members should select the ***"NON member's Price"*** before placing the order and then enter the IRTS Discount Code during the checkout process. At this point the discount will be applied.

IRTS members who are also RSGB members should continue to select the ***"RSGB Member's Price"*** and not use the IRTS Discount Code. The current IRTS Discount Code is **IRTS2020XWW**; this will change from time to time.

www.rsgbshop.org

IRTS OFFICER VACANCIES

The society is looking for volunteers to fill the following officer vacancies which arise from the retirement in the near future of the members currently holding these positions.

1 Licence Exam Administrator: The person holding this position has responsibility for running the Amateur Station Licence Exam in accordance with the terms of the contract between IRTS and ComReg for running the licence exam. The work involves agreeing exam dates, arranging exam venues, publicising exam arrangements, liaising with candidates, supervising and invigilating the exam as well as submitting exam results to ComReg. It is envisaged that the Licence Exam Administrator will be appointed to the Licence Exam Board. Note that, in relation to this position, in order to comply with the terms of the contract between IRTS and ComReg, those involved in running the licence exam may not at the same time be involved in training or tutoring candidates for the exam.

2. Web Editor / Webmaster: We are looking for someone to take over responsibility for the IRTS web site. In particular, we need someone with a knowledge of content management systems, who would be in a position to develop the web site to a stage where individual society officers would then be in a position to maintain sections of the site relevant to their own areas.

IRTS is run entirely by volunteers – more than 30 members are currently involved in looking after one or more aspects of the work of the society. We are now asking members who may be in a position to take on one of the positions listed above to put their names forward for consideration.
Please address all enquiries about these positions to the President, Jim Holohan EI4HH (see www.irts.ie/committee for contact details).

Silent Key Peter Henshaw EI5JE

Peter Henshaw EI5JE became a silent key on 27th April at the age of 83, following a short illness. He was pre-deceased by his wife, Peggy, and is survived by his daughter Miriam and two sons, Conor and Paul, grandchildren Rachel, Erin, Kristen, Luke and Cody.

Peter worked in Aer Lingus for over 30 years and, following retirement, amateur radio became his big passion, however he also counted travel, photography, Star Trek and jazz among his many other interests. He attended radio theory classes in South Dublin Radio Club, following which he obtained his amateur radio licence in 1999. Peter was active on the air until just before his recent illness; although he took part in some field day events, his main interest was in long QSOs with his friends locally and across the world. He was a frequent visitor to the North of England, staying there with his daughter Miriam; he timed his visits to coincide with nearby radio rallies, arranging for face-to-face QSOs at these rallies with his many on-air friends. Peter was a very enthusiastic and, indeed, entertaining member of South Dublin Radio Club, often recounting his interesting on-air chats during the club's Tuesday night meetings.

Peter was a Dad, a Grandad and a Great-Grandad, he will be greatly missed by his family and his many friends.

May he rest in peace.

Peter EI5JE in Co. Leitrim at a South Dublin Radio Club field day in 2003.

Silent Key John Dolan EI9AD

It is with great sadness that we report the passing of John Dolan EI9AD. John was a long time member of the Limerick Radio Club where he served in various roles. Originally from Bawnboy Co Cavan, John live in Shelbourne Park, Limerick.

In his early career, John worked in the Aviation Communications Service at Ballygirreen, Co Clare. John went on to lecture in electronics and communications in the School of Electrical Engineering Limerick in the 1960's. He then moved with the school to Moylish, which is now known as Limerick Institute of Technology.

Over many years John played a leading role in various Limerick Radio Club activities, including preparation and presentation of Amateur Radio courses in Region 4. John died peacefully in his home on Wedneday16th April.

We extend our deepest sympathy to his daughter Mary, sons Carl and Damien and extended family.

Ar dheis Dé go raibh a h-anam dílis

Silent Key Tom O'Brien EI5CA

It is with great sadness that we report the passing of Tom O'Brien EI5CA, Radharc na Coille, Shannon, Co. Clare. Tom passed away peacefully at his home on Wednesday 20th May.

He was a much respected and valued member of the Limerick Clare Amateur Radio Club. One of life's gentlemen, his enthusiasm and dedication to Amateur Radio was infectious. CW was his favourite mode of operation. Tom was a keen SOTA operator in both EI and France. He was also a keen cyclist - competing in many road races. Gardening was also one of Tom's passions.

Originally from Cloyne Co. Cork, Tom studied for his PMG at the Cork Radio Telegraph Institute where he graduated in 1964. having spent some years as a Marine Radio Officer, he joined Infotronics in Shannon and in 1972 he joined, what is now, the Irish Aviation Authority where he worked in the Radar Division in Shannon airport.

We offer our deepest sympathy to his wife Christine, daughter Margaret and to the extended family.

Ar dheis Dé go raibh a h-anam dílis

Silent Key Joe Clarke EI9HO

It is with great sadness that we must announce the passing of Joe Clarke EI9HO from Killarney, Co Kerry. Joe served in the Army at the Curragh in his early years, before moving to England where he worked in the Postal service. Years later he returned to Killarney and became an active member of the Kerry Amateur Radio Group. Joe Ei9HO and John Ei9JO together were affectionately known as the "HO-JO gang" on club outings. Joe was active on HF up until very recently, and was a regular caller to the CT1JRO Net on 14.331 MHz twice weekly.

Joe will be sadly missed by his fellow club members at KARG.

We extend our deepest sympathy to his daughter Sandra, grandchildren and great-grandchildren and his many friends in Amateur Radio.

Ar dheis Dé go raibh a h-anam dílis

Valentia Island back in 2004 for ILLW weekend.

EI DXCC Single Band Status as at 29th May 2020												*Compiled by Joe Ryan EI7GY*
Pos	**Call**	**160**	**80**	**40**	**30**	**20**	**17**	**15**	**12**	**10**	**6**	**2**
11	**EI4DQ**	160	80	40	30	20	17	15	12	10	6	2
10	**EI2GLB**	160	80	40	30	20	17	15	12	10	6	
10	**EI2JD**	160	80	40	30	20	17	15	12	10	6	
10	**EI3I0**	160	80	40	30	20	17	15	12	10	6	
10	**EI6FR**	160	80	40	30	20	17	15	12	10	6	
10	**EI7BA**	160	80	40	30	20	17	15	12	10	6	
10	**EI9FBB**	160	80	40	30	20	17	15	12	10	6	
9	**EI6IZ**	160	80	40	30	20	17	15	12	10		
9	**EI8IQ**		80	40	30	20	17	15	12	10	6	
9	**EI8IU**	160	80	40	30	20	17	15	12	10		
9	**EI9JF**	160	80	40	30	20	17	15	12	10		
8	**EI1DG**		80	40	30	20	17	15	12	10		
8	**EI7GY**		80	40	30	20	17	15	12	10		
8	**EI9FVB**		80	40	30	20	17	15	12	10		
7	**EI4BZ**		80	40	30	20	17	15		10		
7	**EI8GS**		80	40		20	17	15	12	10		
6	**EI3CTB**			40	30	20	17	15		10		
6	**EI7JZ**			40		20	17	15	12	10		
6	**EI9HX**			40		20	17	15	12	10		
5	**EI4CF**			40		20	17	15		10		
5	**EI4GJB**					20	17	15	12	10		
5	**EI4HH**					20	17	15	12	10		
5	**EI6AL**					20	17	15	12	10		
5	**EI6JK**			40		20		15	12	10		
5	**EI9E**		80	40		20		15		10		
5	**EI9GLB**					20	17	15	12	10		
4	**EI8JX**			40		20	17	15				
3	**EI4GK**					20		15		10		
3	**EI4GNB**					20		15		10		
3	**EI5EV**					20		15		10		
3	**EI6FM**					20		15		10		
3	**EI6HB**					20		15		10		
3	**EI7GL**			40						10	6	
3	**EI9CN**					20	17	15				
3	**EI9HQ**					20		15		10		
2	**EI2II**					20				10		
2	**EI5IF**					20		15				
2	**EI6GI**			40		20						
2	**EI7IG**					20		15				
2	**EI7JN**					20		15				
2	**EI9KF**			40		20						
1	**EI3EBB**										6	
1	**EI3HA**					20						
1	**EI5FQB**					20						
1	**EI5GSB**					20						
1	**EI5KO**					20						
1	**EI6S**		80									
1	**EI7BMB**										6	
1	**EI9CJ**									10		

EI call signs in ARRL's DXCC Listings - *Compiled by JOE Ryan EI7GY*

as at 29th May 2020

Entries in Bold Type show changes since 2nd March 2020

Mixed

357 EI6S
354 EI7CC
349 EI6FR
347 EI8EM
346 EI7BA
336 EI9FBB
334 EI3IO
331 EI5GM
330 EI9O
328 EI9JF
324 EI2GLB
320 EI4II
314 EI8IU
312 EI6IZ
312 EI8FH
306 EI2HY
306 EI4CF
304 EI2JD
303 EI2CR
302 EI7JZ
302 EI9FVB (+2)
300 EI8GS
279 EI9GLB
275 EI4BZ
274 EI6AL
263 EI5JQ
262 EI2GX
251 EI1DG
249 EI4HH
249 EI5GUB
244 EI7GY
243 EI6FM
243 EI6JK
230 EI4GXB
221 EI3CTB
220 EI9E
214 EI5IF
210 EI6IL
209 EI7JN
204 EI9CN (+2)
201 EI4IR
193 EI3HA
192 EI5EV
191 EI6HB
189 EI9HQ
175 EI7IG
172 EI5KO
170 EI4GNB
162 EI5FQB
160 EI4GZB
135 EI9CF
134 EI9KF
131 EI5GSB
128 EI8HA
127 EI9CJ
121 EI8JK
113 EI4GD (+5)
109 EI100YXQ
104 EI9GWB
103 EI3HDB
102 EI6GRB (New)
101 EI2KJ
101 EI7JQ
101 EI8JB
100 EI3GAB
100 EI3ISB (New)
100 EI4HQ
100 EI8KF
100 EI9GGB

CW

344 EI6FR
340 EI7BA
334 EI7CC
322 EI9JF
321 EI9FBB
309 EI6IZ
305 EI8FH
301 EI2GLB
301 EI3IO
300 EI8IU (+1)
287 EI2JD
258 EI6AL
255 EI4BZ
242 EI5GM
242 EI5GM
236 EI7GY
234 EI8JX (+2)
215 EI1DG
210 EI9FVB (+9)
197 EI4HH
180 EI7JZ
171 EI6GI (+6)
169 EI7IG
143 EI9E
141 EI3CTB
127 EI9CF
126 EI4BK
113 EI2KK
109 EI2IH
104 EI6HB
101 EI5EV
100 EI3KE
100 EI3KG

Phone

354 EI6S
352 EI7CC
347 EI8EM
344 EI7BA
342 EI6FR
324 EI9FBB
307 EI3IO
306 EI9HX
300 EI4GK
299 EI8GS
292 EI2GLB
292 EI9FVB (+1)
292 EI9JF
290 EI7JZ
285 EI8IU
284 EI2JD
279 EI9GLB
275 EI4CF
249 EI5GUB
241 EI6JK
232 EI6FM
223 EI6AL
222 EI4HH
222 EI8FH
218 EI4BZ
216 EI7GL
215 EI9E
208 EI4GJB
200 EI6IL
200 EI9CN (+1)
191 EI3HA
188 EI2CH
186 EI7II
186 EI9HQ
177 EI5IF
177 EI9FE
176 EI3CTB
162 EI5FQB
160 EI2II
160 EI6HB
157 EI4GNB
131 EI5GSB
108 EI8JK
106 EI1DG
103 EI3HDB
103 EI6GGB
102 EI4DJB
101 EI3IP
100 EI3GAB

RTTY / Digital

307 EI7BA
288 EI6FR (+7)
235 EI8IU (+4)
231 EI1DG
207 EI2GLB
195 EI8FH
178 EI3CTB
159 EI5KO
128 EI9FVB (New)
121 EI6HB
117 EI9KF
114 EI8GS
108 EI5IF
102 EI8KN
100 EI3ISB (New)
100 EI4BZ

160m

253 EI7BA
213 EI3IO
144 EI6IZ
140 EI6FR (+21)
138 EI9FBB
125 EI2JD
112 EI9JF
102 EI4DQ
101 EI2GLB
100 EI8IU (New)

80m

310 EI6S
301 EI7BA
244 EI9FBB
235 EI6FR (+12)
171 EI2JD
163 EI9JF
151 EI3IO
145 EI6IZ
141 EI9E
135 EI2GLB
135 EI4BZ
112 EI7GY
110 EI8GS
107 EI8IU
106 EI4DQ
105 EI1DG
103 EI8IQ
100 EI9FVB

40m

320 EI7BA
280 EI6FR (+9)
279 EI9JF
258 EI9FBB
216 EI6IZ
209 EI4CF
208 EI2GLB
206 EI2JD
202 EI3IO
157 EI7JZ
156 EI4BZ
154 EI6JK
150 EI8GS
149 EI8IU (+2)
149 EI9E
132 EI1DG
132 EI3CTB
128 EI7GY
128 EI9HX
127 EI9FVB (+2)
123 EI8JX (+2)
119 EI4DQ
117 EI7GL
111 EI6GI (+1)
102 EI8IQ (New)
102 EI9KF

30m

333 EI7BA
279 EI6FR (+3)
277 EI9JF
258 EI9FBB
233 EI6IZ
231 EI3IO
183 EI2GLB
30m

178 EI8IU (+1)
157 EI7GY
140 EI4BZ
127 EI2JD
122 EI1DG
114 EI3CTB
111 EI8IQ (New)
107 EI4DQ
106 EI9FVB

20m

343 EI7BA
340 EI6FR
329 EI9FBB
294 EI9JF
281 EI8IU (+1)
266 EI2JD
264 EI9FVB (+8)
261 EI3IO
257 EI9HX
256 EI4CF
256 EI8GS
255 EI2GLB
247 EI6IZ
229 EI7JZ
207 EI4BZ
197 EI1DG
191 EI6FM
189 EI9E
179 EI8JX (+2)
173 EI9GLB
171 EI7JN
168 EI6AL
168 EI7GY
162 EI5KO
161 EI6JK
154 EI4HH
153 EI9CN (+1)
147 EI3CTB
146 EI6GI (+4)
145 EI6HB
144 EI4GJB
139 EI9HQ
133 EI5FQB
133 EI5IF
129 EI4GNB
126 EI3HA
115 EI7IG
113 EI4GK
112 EI8IQ
109 EI4DQ
105 EI2II
104 EI5EV
104 EI9KF
102 EI5GSB

17m

335 EI7BA
308 EI6FR
306 EI9FBB
264 EI8IU (+1)
248 EI9JF
238 EI6IZ
222 EI9FVB (+12)
216 EI2GLB
197 EI2JD
193 EI6AL
171 EI7GY
169 EI1DG
165 EI7JZ
162 EI4CF
155 EI9HX
148 EI4HH
146 EI3IO
141 EI8GS
139 EI4BZ
127 EI4GJB
121 EI9GLB
114 EI3CTB
106 EI9CN
105 EI4DQ
105 EI8IQ (New)
104 EI8JX (New)

15M

335 EI7BA
317 EI6FR (+1)
305 EI9FBB
272 EI8IU
256 EI9FVB (+7)
253 EI2GLB
251 EI4CF
232 EI2JD
227 EI3IO
223 EI6IZ
209 EI9JF
203 EI4BZ
203 EI8GS
199 EI7JZ
197 EI6AL
197 EI9E
193 EI6JK
190 EI1DG
172 EI9HX
171 EI4HH
159 EI6FM
156 EI7GY
149 EI8IQ
147 EI8JX
139 EI9GLB
137 EI3CTB
136 EI6HB
132 EI4GNB
127 EI9CN
120 EI4GJB
109 EI7JN
108 EI4DQ
107 EI5IF
106 EI5EV
105 EI9HQ
104 EI4GK
104 EI7IG

12m

326 EI7BA
282 EI9FBB
229 EI8IU (+2)
213 EI9FVB (+7)
205 EI6FR (+2)
170 EI6AL
168 EI2GLB
164 EI6IZ
163 EI9JF
151 EI2JD
140 EI6JK
139 EI7JZ
138 EI1DG
128 EI3IO
124 EI8IQ (New)
118 EI7GY
110 EI9HX
109 EI8GS
103 EI9GLB
100 EI4DQ
100 EI4GJB
100 EI4HH

10m

308 EI7BA
284 EI9FBB
262 EI3IO
235 EI6FR
232 EI2GLB
221 EI9FVB (+6)
213 EI8IU (+2)
211 EI8GS
199 EI2JD
199 EI4CF
188 EI4BZ
182 EI6AL
180 EI4HH
179 EI1DG
177 EI9E
173 EI6JK
170 EI6IZ
168 EI7JZ
150 EI9JF
147 EI6FM
144 EI7GL
136 EI4GK
135 EI7GY
133 EI8IQ
128 EI3CTB
125 EI9GLB
123 EI4GNB
116 EI9HQ
112 EI4GJB
111 EI9CJ
111 EI9HX
108 EI5EV
105 EI6HB
102 EI4DQ
101 EI2II

6m

164 EI3IO
150 EI9FBB
120 EI4DQ
119 EI7BMB
118 EI7BA
111 EI7GL
110 EI8IQ
108 EI2GLB
107 EI2JD
105 EI6FR (+3)
101 EI3EBB

2m

153 EI4DQ

DXCC Honor Roll

Mixed

340 EI6FR/349
338 EI6FR/344
340 EI7BA/346
335 EI7BA/340
339 EI7CC/354
338 EI8EM/347
337 EI6S/357
333 EI9FBB/336

Phone

338 EI7BA/344
338 EI8EM/347
337 EI7CC/352
336 EI6S/354
334 EI6FR/342

CW

338 EI6FR/334
335 EI7BA/340

DXCC Challenge

2932 EI7BA
2534 EI9FBB
2415 EI6FR (+51)
1964 EI3IO
1918 EI9JF
1854 EI2GLB
1840 EI6IZ
1829 EI8IU (+23)
1783 EI7CC
1766 EI2JD

DXCC Challenge

1583 EI9FVB (+52)
1466 EI4CF
1332 EI1DG
1317 EI4BZ
1310 EI8GS
1205 EI7JZ
1201 EI7GY
1093 EI6AL
1092 EI5GM
1090 EI6JK
1078 EI4DQ
1060 EI9HX
1048 EI8IQ (New)

The following Silent Keys were Holders of DXCC Awards

DXCC Honor Roll

Mixed

336 EI8H/365
331 EI2GS/340

CW

109 EI4HM

PHONE

338 EI2GS
331 EI8AR
309 EI3GV
300 EI8AU
116 EI6CPB
114 EI4EX

DXCC Mixed

365 EI8H
340 EI2GS
116 EI6CPB

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- Element Phasing 2-7/81

X-300N	**6.5/9db**	**€125**
V-2000	**2.15/6.2/8.4db**	**€135**
X-50N	**4.5/7.2db**	**€79**
X-30N	**3/5.5db**	**€65**

X-510N 8.3/11.7db €149

5.2m